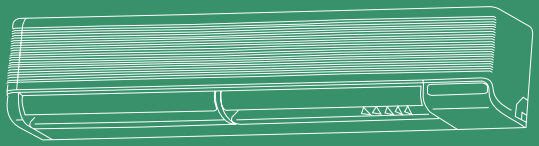
Installation and Maintenance Manual

CSU-05HCAA CSU-07HCAA
CSU-09HCAA CSU-12HCAA
CSU-18HCAA CSU-21HCAA
CSU-24HCAA
CSU-09HHAA CSU-12HHAA
CSU-18HHAA CSU-21HHAA
CSU-24HHAA



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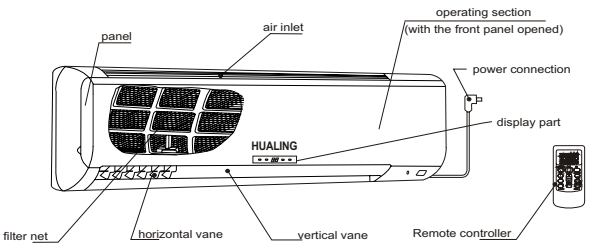
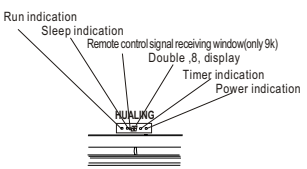
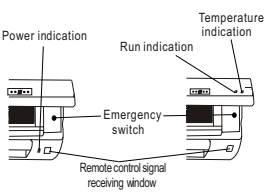
I. Designations and functions of parts

● **5K/7K/9K/12K/18K/21K/24K Series Indoor Unit**





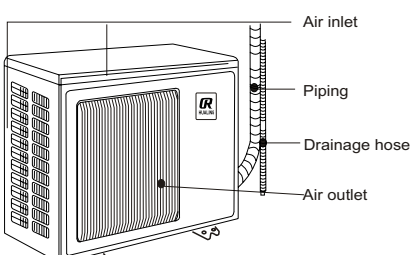
Operation section of
9K series units
(standby configuration)



Operation section of
12K series units

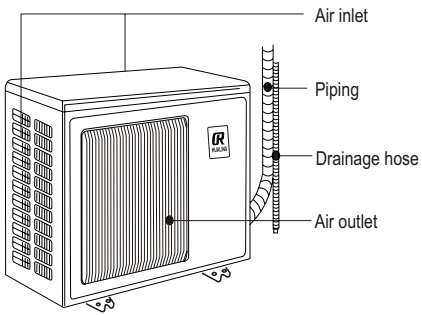
Operation section of
18K/21K/24K series units

● **5K/7K/9K Series Outdoor unit**

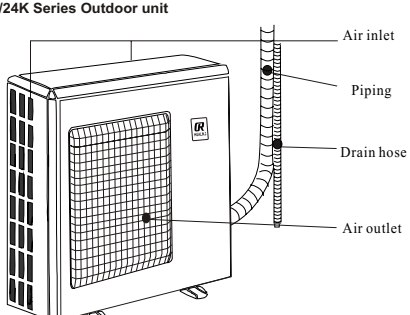


I. Designations and functions of parts

● **12K/18K Series Outdoor unit**

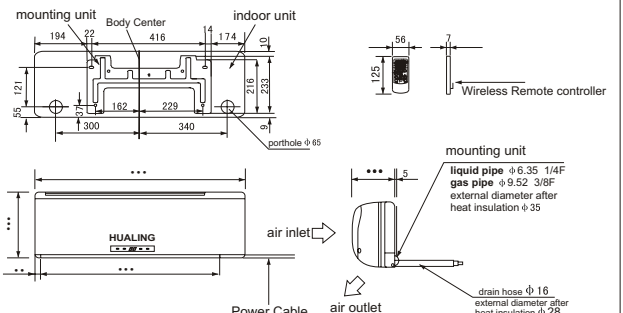


● **21K/24K Series Outdoor unit**



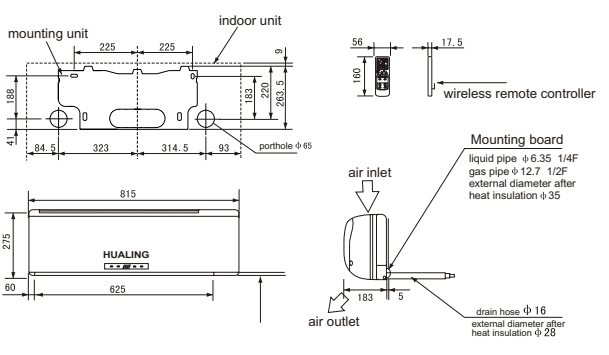
II .Dimensions

● CSU-05HCAA CSU-07HCAA CSU-09HCAA
CSU-09HHAA **indoor unit**



Unit:mm

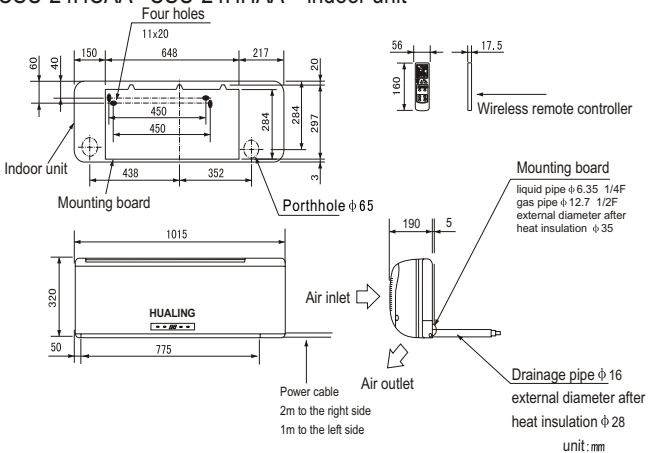
● CSU-12HCAA CSU-12HHAA **indoor unit**



Unit:mm

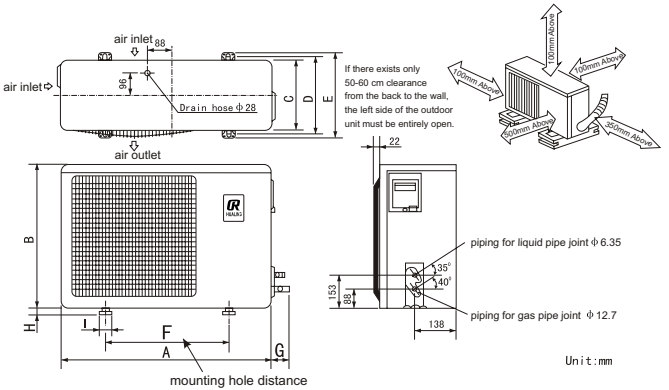
II.Dimensions

● CSU-18HCAA CSU-18HHAA CSU-21HCAA CSU-21HHAA
CSU-24HCAA CSU-24HHAA indoor unit



II.Dimensions

● Outdoor unit



● OUTDOOR UNITS DIMENSION

Model	A	B	C	D	E	F	G	H	I
CU-05CA	600	482	232	286	311	370	50	20	55
CU-07CA	600	482	232	286	311	370	50	20	55
CU-09C(H)A	600	482	232	286	311	370	50	20	55
CU-12C(H)A	772	520	256	285	320	500	60	20	50
CU-18C(H)A	772	520	256	285	320	500	74	20	50
CU-21C(H)A	850	605	290	310	345	500	74	20	50
CU-24C(H)A	850	605	290	310	345	500	74	20	50

III. Specification

Performance data \ Model				CSU-05HCAA	CSU-07HCAA	CSU-09HCAA	CSU-09HHAA
Functions				Cooling-only			Cooling and heating
Power supply				220 VAC ～ 50Hz			
Capacities	Capacity		kW	1.42	1.932	2.2	2.2/2.4
	Dehumidifying capacity		l/h	0.6	0.65	0.91	0.91
	Air supply capacity		m^3/h	410	430	430	430
Other electrical data	Power supply capacity		A	10	10	15	15
	Running capacitor		μF	20	25	25	20
	Input power		kW	0.5	0.62	0.775	0.82/0.72
	Power factor		%	97	97	97	97
	Stockstill current		A	12	15	19.8	18
	Compressor motor current		A	2.4	2.8	3.4	3.9
	Fan motor current		A	In0.22/out0.25	In0.23/out0.48	in0.23/out0.48	in0.35/out0.86
EER				3.1	3.12	**2. 85**	2.7
Compressor	Winding resistance(at 20℃)		Ω				
	Model			SD091CV-H3BU	PH108X1C	PH135X1C-8DZD2	KH145VHEA
Indoor fan motor	Winding resistance(at20℃)		Ω				
Outdoor fan motor	Winding resistance(at20℃)		Ω				
Dimensions	Indoor unit	Length	mm	740	740	740	740
		Width	mm	243	243	243	243
		Heigth	mm	200	200	200	200
	Outdoor unit	Length	mm	**600**	600	600	600
		Width	mm	**232**	232	232	232
		Height	mm	**502**	502	502	502
Weight	Indoor unit		kg	7	7	7	7
	Outdoor unit		kg	23	23	23	23
Other data				5 and swing	5 and swing	5 and swing	5 and swing
	Noise	Indoor unit	dB(A)	26-39	26-39	29-39	29-39
		Outdoor unit	dB(A)	54	54	54	54
	Fan speed	Indoor unit	r/min	1100/980/900	1100/980/900	1100/980/900	1100/980/900（cooling) 950/870/800(heating)
		Outdoor unit	r/min	870	870	870	870
	Fan speed stage	Indoor unit		3	3	3	3
		Outdoor unit		1	1	1	1
	Refrigerant R22		g	400	470	645	680
	Thermister(at 25℃)		kΩ	10	10	10	10

1、Test conditions：

cooling indoor unit dry bulb 27℃ wet bulb19℃

outddor unit dry bulb 35℃ wet bulb 24℃

2、The data should subject to the nameplate they are different from those on the nameplate.

III. Specification

Performance data \ Model				CSU-12HCAA	CSU-12HHAA	CSU-18HCAA	CSU-18HHAA
Functions				Cooling-only	Cooling AND HEATING	Cooling-only	Cooling AND HEATING
Power supply				220 VAC ～ 50Hz			
Capacities	Cooling capacity		kW	3.1	3.2/3.42	4.5	4.48/4.98
	Dehumidifying capacity		l/h	1.27	1.31	1.9	2.3
	Air supply capacity		m^3/h	490	490	680	680
Other electrical data	Power supply capacity		A	5.4	5.4/5.2	8.35	8.35/7.6
	Running capacitor		μ F	35	35	50	50
	Input power		kW	1.15	1.16/1.13	1.8	1.8/1.65
	Power factor		%	97	97	97	97
	Stockstill current		A	29.9	29.9	39	39
	Compressor motor current		A	5.55	5.55	8.1	8.1
	Fan motor current		A	in0.28/out0.56	in0.23/out0.48	in0.28/out0.56	in0.23/out0.48
EER				2.68	2.75/3.0	2.5	2.5/3.0
Compressor	Winding resistance(at 20℃)		Ω				
	Model			PH215X2C-8FTC	PH215X2C-8FTC	TH310VEEC	TH310VEEC
Indoor fan motor	Winding resistance(at20℃)		Ω				
Outdoor fan motor	Winding resistance(at20℃)		Ω				
Dimensions	Indoor unit	Length	mm	740	740	1015	1015
		Width	mm	200	200	320	320
		Heigth	mm	243	243	200	200
	Outdoor unit	Length	mm	772	772	772	772
		Width	mm	254	254	254	254
		Height	mm	540	540	540	540
Weight	Indoor unit		kg	8	8	14	14
	Outdoor unit		kg	35	35	35	35
Other data				5 and swing	5 and swing	5 and swing	5 and swing
	Noise	Indoor unit	dB(A)	35-41	35-41	35-46	35-46
		Outdoor unit	dB(A)	54	54	55	55
	Fan speed	Indoor unit	r/min	1100/980/900	1200/1120/1050（cooling) 1260/1160/1100(heating)	1050/980/900	1050/980/900（cooling) 1050/1000/960(heating)
		Outdoor unit	r/min	780	780	780	780
	Fan speed stage	Indoor unit		3	3	3	3
		Outdoor unit		1	1	1	1
	Refrigerant R22		g	780	1150	1020	1130
	Thermister(at 25℃)		kΩ	10	10	10	10

1、Test conditions：

cooling indoor unit dry bulb 27℃ wet bulb19℃

outddor unit dry bulb 35℃ wet bulb 24℃

2、The data should subject to the nameplate they are different from those on the nameplate.

III. Specification

Performance data \ Model				CSU-21HCAA	CSU-21HHAA	CSU-24HCAA	CSU-24HHAA
Functions				Cooling-only	Cooling and heating	Cooling-only	Cooling and heating
Power supply				220 VAC ～ 50Hz			
Capacities	Capacity		kW	5.1	5.08/5.8	5.98	5.94/6.63
	Dehumidifying capacity		l/h	2.0	2.1	2.45	2.43
	Air supply capacity		m^3/h	680	680	730	730
Other electrical data	Power supply capacity		A	8.9	8.7/8.5	11.5	11.4/11.4
	Running capacitor		μF	50	50	35	50
	Input power		kW	1.92	1.96/1.85	2.4	2.38/2.38
	Power factor		%	97	97	97	97
	Stockstill current		A	42	38/42	52	52
	Compressor motor current		A	9.3	8.1	11.5	11.5
	Fan motor current		A	in0.22/out0.25	In0.23/out0.48	In0.23/out0.48	in0.35/out0.86
EER				2.65	2.58/3.1	**2. 48**	2.48/2.8
Compressor	Winding resistance(at 20℃)		Ω				
	Model			SHW33TC4-U	TH310VEEC	SHV33YC6-G	SHV33YC6-G
Indoor fan motor	Winding resistance(at20℃)		Ω				
Outdoor fan motor	Winding resistance(at20℃)		Ω				
Dimensions	Indoor unit	Length	mm	1015	1015	1015	1015
		Width	mm	320	320	320	320
		Heigth	mm	200	200	200	200
	Outdoor unit	Length	mm	850	850	850	850
		Width	mm	290	290	290	290
		Height	mm	610	610	610	610
Weight	Indoor unit		kg	14	14	14	14
	Outdoor unit		kg	47	47	53	53
Other data				5 and swing	5 and swing	5 and swing	5 and swing
	Noise	Indoor unit	dB(A)	46	46	46	46
		Outdoor unit	dB(A)	59	59	59	59
	Fan speed	Indoor unit	r/min	1200/1120/1000	1200/1120/1050 1260/1160/1100(heating)	1280/1150/1050(cool)	1280/1150/1050
		Outdoor unit	r/min	820	820	910	910
	Fan speed stage	Indoor unit		3	3	3	3
		Outdoor unit		1	1	1	1
	Refrigerant R22		g	1300	1300	1600	1600
	Thermister(at 25℃)		kΩ	10	10	10	10

1、Test conditions：

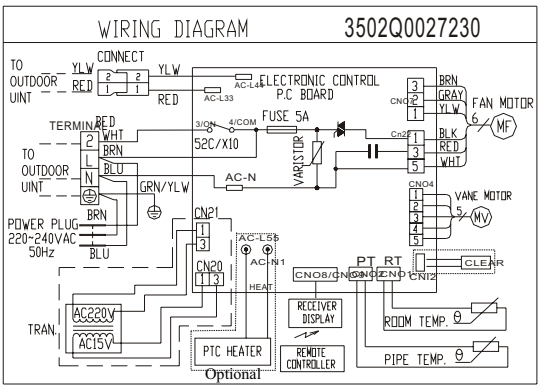
cooling indoor unit dry bulb 27℃ wet bulb19℃

outddor unit dry bulb 35℃ wet bulb 24℃

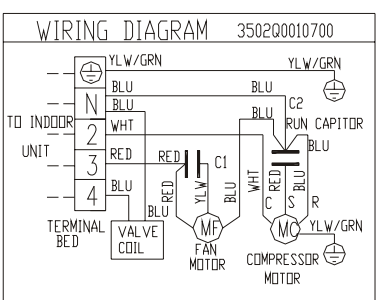
2、The data should subject to the nameplate they are different from those on the nameplate.

IV. Wiring diagram

● **Wiring diagram for heat pump indoor unit 5K/7K/9K/12K**

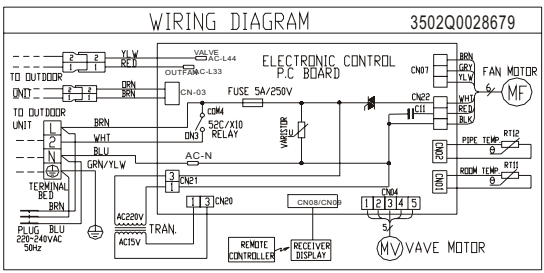


● **Wiring diagram for heat pump outdoor unit 5K/7K/9K/12K**

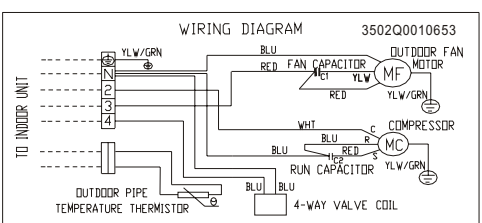


IV. Wiring diagram

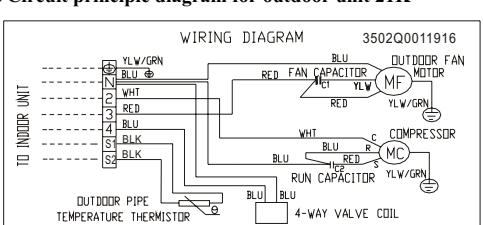
● **Wiring diagram for heat pump indoor unit 18K/21K**



● **Circuit principle diagram for outdoor unit 18K**

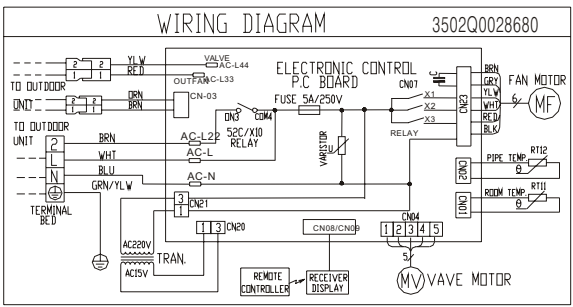


● **Circuit principle diagram for outdoor unit 21K**

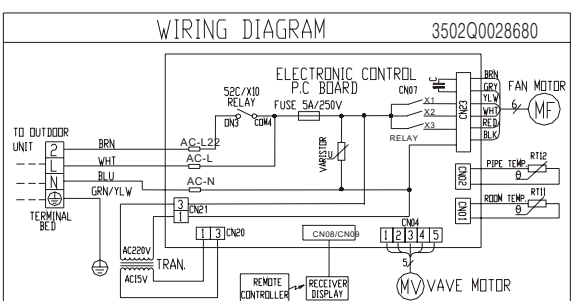


IV. Wiring diagram

● **Wiring diagram for heat pump indoor unit 24K**

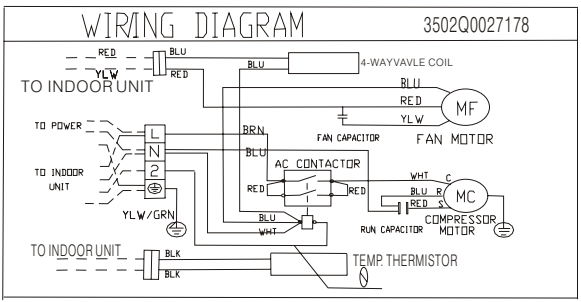


● **Wiring diagram for only cooling indoor unit 24K**

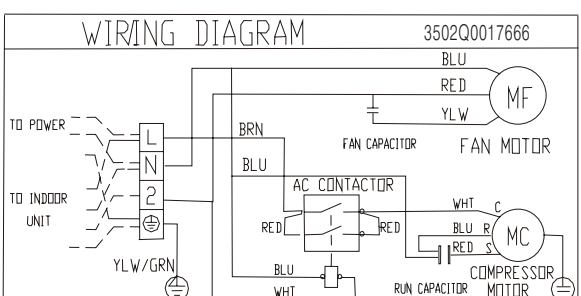


IV. Wiring diagram

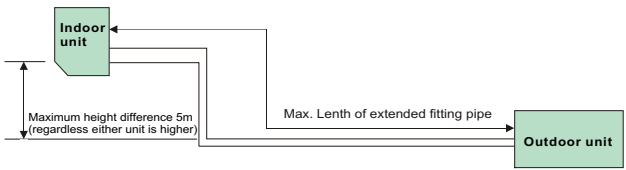
● **Wiring diagram for heat pump outdoor unit 24K**



● **Wiring diagram for only cooling outdoor unit 24K**



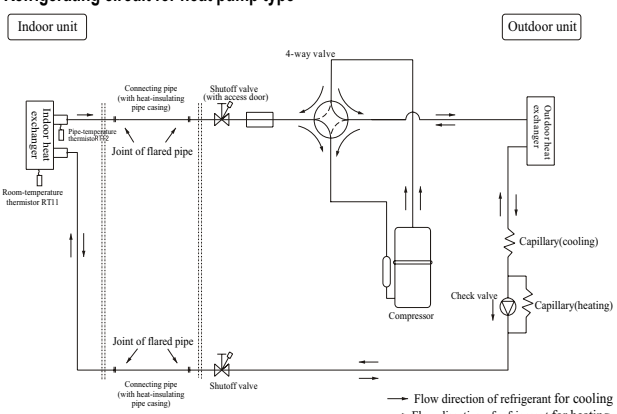
V. Refrigerating circuit



● Refrigerant replenishment (R22:g):

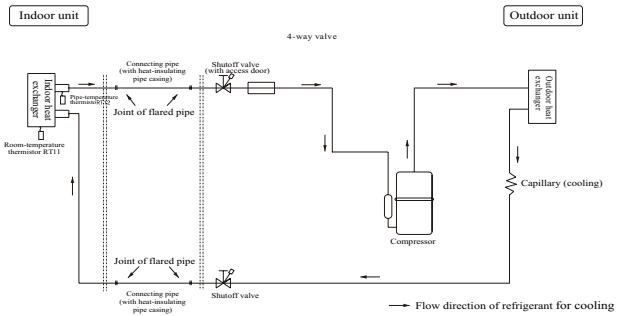
No refrigerant replenishment is required if extended length of fitting pipe is less than 7m.
If extended length of fitting pipe is over 7m, replenishing volume of refrigerant should be calculated as per the following formula: replenishing volume Xg=15g/mX(A-7)m

● Refrigerating circuit for heat pump type



V. Refrigerating circuit

● Refrigerating circuit for only cooling type



● Maxinmum length of fitting capillary pipe for heat pump unit

Model	Max length of extended fitting pipe (m)	Max Height difference (m)	Max number of bent pipes	Outer diameter of fitting pipe:(mm)		Capillary (cooling)	Capillary (heating)
				Gas pipe	Liquid pipe		
9K	10	5	10 spots	Φ9.52	Φ6.35	Φ3×1.4×850	Φ3×1.6X450
12K	15	5	10 spots	Φ12.7	Φ6.35	Φ3×1.6×650	Φ3×1.6×350
18K	15	5	10 spots	Φ12.7	Φ6.35	Φ4×2×900	Φ4×2×650
21K	15	7	10 spots	Φ15.8	Φ9.52	Φ4×2×800	Φ4×2×600
24K	15	7	10 spots	Φ15.8	Φ9.52	Φ4×2×550	Φ4×2×250

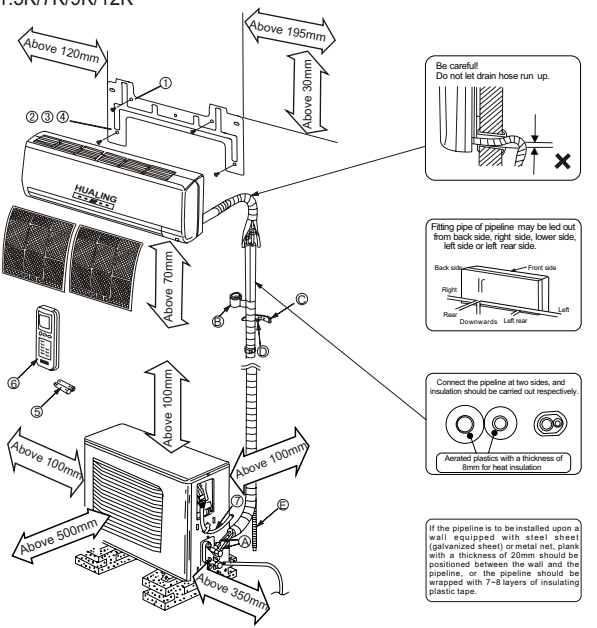
● Maxinmum length of fitting capillary pipe for only cooling unit

Model	Max length of extended fitting pipe (m)	Max Height difference (m)	Max number of bent pipes	Outer diameter of fitting pipe:(mm)		Capillary (cooling)	Capillary (heating)
				Gas pipe	Liquid pipe		
5K	10	5	10 spots	Φ9.52	Φ6.35	Φ3×1.4×1000	
7K	10	5	10 spots	Φ9.52	Φ6.35	Φ3×1.4X1000	
9K	10	5	10 spots	Φ9.52	Φ6.35	Φ3×1.4X1000	
12K	15	5	10 spots	Φ12.7	Φ6.35	Φ3×1.6×600	
18K	15	5	10 spots	Φ12.7	Φ6.35	Φ4×2×1000	
21K	15	7	10 spots	Φ15.8	Φ9.52	Φ4×2×700	
24K	15	7	10 spots	Φ15.8	Φ9.52	Φ4×2×500	

VI. Installation instructions

1. Installation diagram

1-1.5K/7K/9K/12K

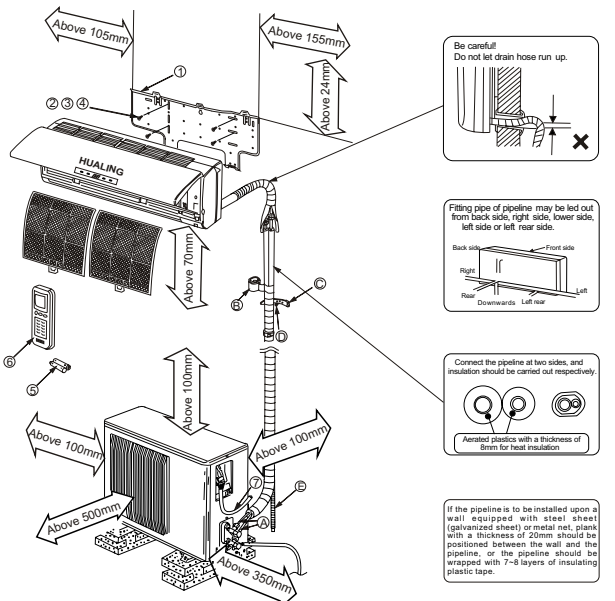

Above 120mm
Above 195mm
Above 30mm
Above 70mm
Above 100mm
Above 100mm
Above 100mm
Above 500mm
Above 350mm
HUALING
Be carefull
Do not let drain hose run up.
Fitting pipe of pipeline may be led out from back side, right side, lower side, left side or left rear side.
Back side
Front side
Right
Left
Rear
Downwards
Left rear
Connect the pipeline at two sides, and insulation should be carried out respectively.
Aerated plastics with a thickness of 8mm for heat insulation
If the pipeline is to be installed upon a wall equipped with steel sheet (galvanized sheet) or metal net, plank with a thickness of 20mm should be positioned between the wall and the pipeline, or the pipeline should be wrapped with 7~8 layers of insulating plastic tape.

Enclosed attachments		Qty	Unit	Installation attachments		Qty	Unit
1	Mounting plate	1	Piece	A	Connecting pipe	2	Pieces
2	Tapping screw ST4*25	5	Pcs	B	Bandage	1	Piece
3	Expansion plug	5	Pieces	C	Tensioning rope	3	Pcs
4	Expansion bolt	2	Pieces	D	Masonry nail	5	Pcs
5	Battery for remote controller	2	Pcs	E	Drain hose	1	Piece
6	Remote controller	1	Piece	F	Putty	1	Box
7	Connecting cable	1	Piece	G	Sealing oil	1	Bottle

VI. Installation instructions

1. Installation diagram

1-2.18K

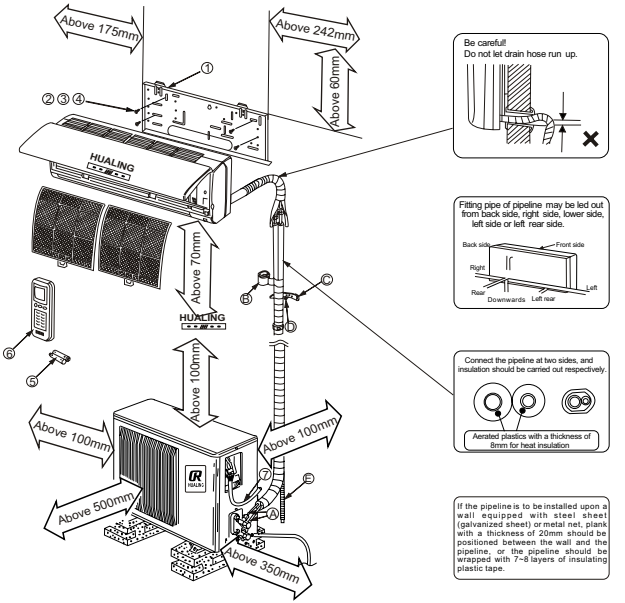

Above 105mm
Above 155mm
Above 24mm
①
②③④
HUALING
Above 70mm
Ⓒ
Ⓑ
Ⓓ
⑤
⑥
Above 100mm
Above 100mm
Above 100mm
Above 500mm
Ⓕ
Ⓔ
Ⓐ
Ⓖ
Above 350mm
Be careful!
Do not let drain hose run up.
Fitting pipe of pipeline may be led out from back side, right side, lower side, left side or left rear side.
Back side
Front side
Right
Left
Rear
Downwards
Left rear
Connect the pipeline at two sides, and insulation should be carried out respectively.
Aerated plastics with a thickness of 8mm for heat insulation
If the pipeline is to be installed upon a wall equipped with steel sheet (galvanized sheet) or metal net, plank with a thickness of 20mm should be positioned between the wall and the pipeline, or the pipeline should be wrapped with 7~8 layers of insulating plastic tape.

Enclosed attachments		Qty	Unit	Installation attachments		Qty	Unit
1	Mounting plate	1	Piece	A	Connecting pipe	2	Pieces
2	Tapping screw ST4*25	5	Pcs	B	Bandage	1	Piece
3	Expansion plug	5	Pieces	C	Tensioning rope	3	Pcs
4	Expansion bolt	2	Pieces	D	Masonry nail	5	Pcs
5	Battery for remote controller	2	Pcs	E	Drain hose	1	Piece
6	Remote controller	1	Piece	F	Putty	1	Box
7	Connecting cable	1	Piece	G	Sealing oil	1	Bottle

VI. Installation instructions

1. Installation diagram

1-3.21K/24K


Above 175mm
Above 242mm
Above 60mm
Above 70mm
Above 100mm
Above 100mm
Above 100mm
Above 500mm
Above 350mm
HUALING
Be careful!
Do not let drain hose run up.
Fitting pipe of pipeline may be led out from back side, right side, lower side, left side or left rear side.
Back side
Front side
Right
Left
Rear
Downwards
Left rear
Connect the pipeline at two sides, and insulation should be carried out respectively.
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4	Expansion bolt	2	Pieces	D	Masonry nail	5	Pcs
5	Battery for remote controller	2	Pcs	E	Drain hose	1	Piece
6	Remote controller	1	Piece	F	Putty	1	Box
7	Connecting cable	1	Piece	G	Sealing oil	1	Bottle

VI. Installation instructions

2.Safety Regulations

Please read safety instructions carefully before installation

All items listed here are extremely important safety instructions, which must be followed.

Legends and their meanings are listed as follows:

⚠ Warning

Users don't try to install by themselves

• Improper installation may cause fire, electric shock, loose of parts or water leakage. Please contact a Hualing agent for installation and maintenance.

Cover of electrical components on indoor unit and maintenance board on outdoor unit must be installed properly.

• Improper installation of cover or panel may cause fire or electric shock due to dust or water.

Cables between indoor and outdoor units must be properly connected by specified cables and make sure that joints properly fixed

• If installed at a place without enough strength, the unit may fall and hurt people

Installation must be made according to installation instructions, the special cables should be used

• Inefficient capacity of the cable or Improper installation may cause fire, electric shock, loose of parts fall and hurt people or water leakage.

The grounding is necessary in construction

• The ground wire must not be connected to gas pipe, water pipe, lightning rod, telephone ground wire. Improper connection of ground wire may cause electric shock

Must not be installed at a place where inflammable gas is leaking

• If inflammable gas accumulated around the unit, explosion may happen

Electrical components must be installed according to instructions, and must use specific electrical power supply

• Insufficient electrical power capacity or improper installation may cause fire or electric shock.

The units must be installed at a place where it can hold certain weight

• If installed at a place without enough strength, the unit may fall and hurt people

The attached or specified installation accessories should be used in installation。

• Improper accessory may cause fire, electric shock or Fall unit and hurt people as well as water leakage

Don't crass to power cables in the installation of electrical components, don't use extension wire or octopuses like wiring

• Improper grounding or insulation may cause fire or electric shock

After installation, make sure there is no leakage of refrigerant

If the until is installed in a humid environment, a switch for prevention of electricity leakage must be installed

• Without leakage prevention switch, electric shock may happen

Drain hose and pipe must be installed according to installation instructions

• Improper installation of drain hose or pipe may damage the unit or home furniture

VI. Installation instructions

3.Installation of Unit:

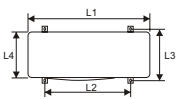
3-1.How to select installing location:

3-1-1. How to select installing location for indoor unit

- Air inlet/ air outlet should be far away from obstacles, ensuring that air flow must not be kept back;
- Do not install the unit at a spot with direct sunshine;
- Select a spot convenient for removal of condensed water and easy connection to outdoor unit;
- The distance between the spot and TV set or acoustic equipment should be 1m at least;
- Keep away from fluorescent lamps or incandescent lamps; (otherwise, it is possible that the wireless remote controller cannot not be normally utilized to controlled)
- Select a solid wall which can bear weight of machine body, free of increase of operating noises or vibration;
- Maximum height difference between indoor unit and outdoor unit should be 5m.

3-1-2. How to select installing location for outdoor unit

- The installing location can bear weight of machine body, free of strong vibration.
- Select a spot with good ventilation, less dust, free of rainwater and direct sunshine
- Select a spot from which the operating noise and exhausted hot air can not affect the neighbors;
- There should be no obstacles around the outdoor unit, which keep back inlet air/outlet air for the unit;
- Select a spot free of leakage of inflammable gases or erosive gases;



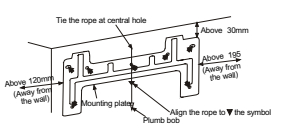
Unit: mm

Model \ Dimension	L1	L2	L3	L4
5K/7K	600	368	278	235
09K	600	368	278	235
12K	780	500	280	250
18K	780	500	280	250
21K	850	500	310	290
24K	850	500	310	290

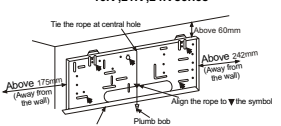
3-2.How to fix the mounting plate

Find a structural member of a wall (e.g. column etc.), and fix the mounting plate onto it horizontally.

5K/7K/9K/12K series



18K ,21K ,24K series

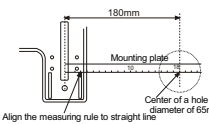


Note: 1. To avoid microshock of mounting plate, the hole pointed at by solid arrow must be secured.
2. If expansion bolt is adopted, it is required to adopt slotted holes 11*20or 11*26 with interval of over 450mm to fix the mounting plate

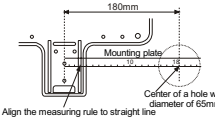
VI. Installation instructions

3-3.Drill holes on the wall

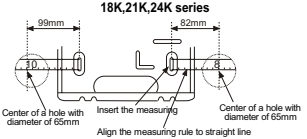
9K series



12K series



18K,21K,24K series



3-4.How to install indoor unit

Outlet the pipeline through the wall hole, and hoist the unit onto the mounting plate.

3-5.How to connect wires for indoor/ outdoor units

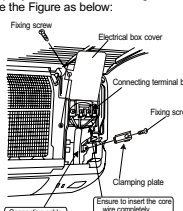
Indoor unit Section:

Wire connection

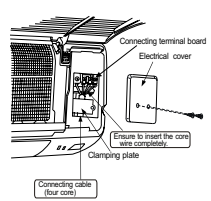
❶ Open the return air grille;

❷ Remove screw for fixing electrical box cover, open (or remove) the electrical box cover; remove fixing screws of clamping plate, and remove the clamping plate;

❸ Properly connect the connecting cables, and tightly clamp the connecting cable by the removed clamping plate. See the Figure as below:



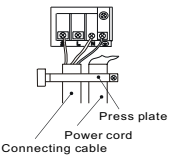
5K/7K/9K/12K series



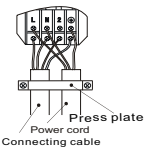
18K,21K,24K series

❹ Reassemble the electrical box cover, and close the return air grille.

VI. Installation instructions



5K/7K/9K/12K BTU

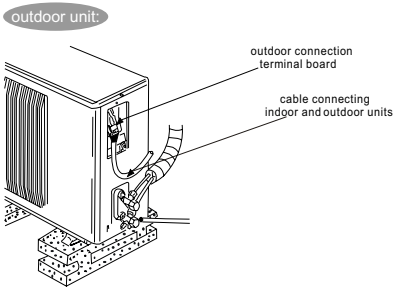


18K/21K/24K BTU

Warning

1. It is required to adopt specified cable for wiring between indoor/outdoor units, ensuring that the connecting terminals must be securely fixed, free of the direct influence of external forces. if it is improperly connected or fixed, it is possible to cause a fire.
2. Indoor unit's cover of electrical box must be properly fixed. Otherwise, dust or water might cause a fire or electrical shock.
3. The power cable for indoor unit of the air conditioner should be PVC-cased cord (cord 53# in IEC227) at least.
4. The power cable for outdoor unit of the air conditioner should be butadiene rubber cased cord (cord 57# in IEC245) at least.

VI. Installation instructions



3-6. Arrangement of refrigerant pipe and drain hose of indoor unit

3-6-1. Precautions:

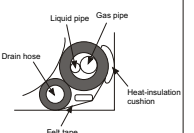
Drain hose must be located below the coolant pipeline;

Do not hunch up or bend the drain hoses;

Do not pull at the drain hose to carry out wrapping operation;

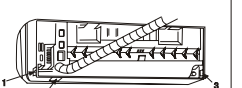
If drain hose must pass through indoors, it must be wrapped with heat-insulating material available in the market;

Use felt tape to wrap up fitting pipe and drain hose, and place heat-insulation cushion upon the wall that contacts the aforesaid two.



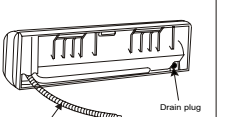
3-6-2. Direction of fitting pipe :

As shown in the Figure, part 1 of the case should be cut off if fitting pipe is led out from right side; part 2 of the case should be cut off if fitting pipe is led out from right lower side, part 3 of the case should be cut off if fitting pipe is led out from left side.



3-6-3. Recondition of drain hose:

If fitting pipe is led out from right or right lower side, it is required to condition the drain hose, for fear of water leakage.

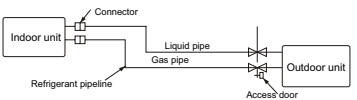


VI. Installation instructions

4. Completed connection of indoor and outdoor units and test run

4-1 flared joint

- The flared joint is located on the indoor and outdoor sides.
- Remove the valve cap of outdoor unit, and then connect the pipelines.
- As shown in Figure below, coolant pipeline is used to connect indoor unit and outdoor unit.



Model	Max length of extended fitting pipe (m)	Max Height difference (m)	Max number of bent pipes	Outer diameter of fitting pipe:(mm)	
				Gas pipe	Liquid pipe
5K/7K/9k	10	5	10 spots	Φ9.52	Φ6.35
12k	15	5	10 spots	Φ12.7	Φ6.35
18k	15	5	10 spots	Φ12.7	Φ6.35
21k	15	5	10 spots	Φ15.8	Φ9.52
24k	15	5	10 spots	Φ15.8	Φ9.52

- Refrigerant adjustment... If pipeline length is over 7m, auxiliary refrigerant (R22) is required. (7m pipeline for outdoor unit is filled with refrigerant)

Pipeline length	Maximum length 7m	Requiring no refrigerant replenishment	
	Longer than 7m	Requiring refrigerant replenishment	50g/m

Pipeline preparation

Fitting pipes of 3m or 4m are available.
① Pipeline specifications listed in table below:

Pipeline	Outer diameter		Insulation thickness	Insulating material
	Mm	Inch		
For liquid	6.35	1/4	6mm	Specific gravity of insulating plastic foam is 0.045
	9.52	3/8	6mm	
For gas	9.52	3/8	6mm	
	12.7	1/2	6mm	
	15.88	5/8	6mm	

②It is required to properly insulate the 2 pcs of refrigerant pipeline so as to avoid condensation.
③ Bending radius of refrigerant pipeline must be greater than 100mm.

Precautions:

Cautiously select the specified insulation thickness. Excessive thickness may disturb the cumulation at back side of indoor unit while insufficient thickness may lead to condensed water dripping.

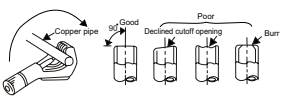
VI. Installation instructions

4-2 Flared pipe processing

• Defect in flared pipe processing will be a major cause of gas leak. Please carry out flared pipe processing properly according to the following method:

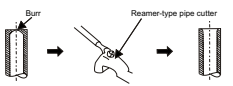
1 Cut off tube

• Use pipe cutting machine to cut off copper tubes correctly.



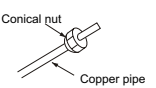
2 Deburring

• Completely remove the burr on cut-off section of the pipe.
• To prevent burr from dropping into the pipe, the cut off opening of pipe line should be positioned downwards during deburring operation



3 Assemble the nut

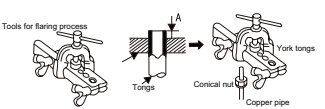
• Remove the conical nut attached to indoor and outdoor unit, and then fix them inside the pipes free of burr.
(After flared processing of pipe, it is impossible to fix them inside it.)



4 Flared pipe processing

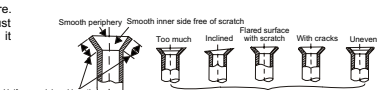
• Carry flaring process by the tools listed below.

Outer diameter	A(mm)
6.35mm	2.0--2.5
9.52mm	3.0--3.5
12.7mm	3.5--4.0
15.88mm	4.0--4.5



5 Check

• Compare the flared shape to the right Figure.
• If visible defect exists in flaring process, just cut off the processed section, and flare it again.



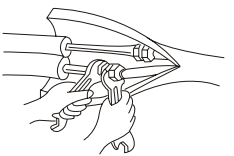
VI. Installation instructions

4-3 Pipeline connection

①Pipeline connection for indoor unit

Connect liquid/gas fitting pipes to indoor unit.

- Apply a layer of sealing oil on surface of pipe saddle (put it inside installation attachments) .
- Firstly align it to the center and connect it, and then manually screw down the conical nut for 3-4 turns.
- Refer to the following moment table; use 2 pcs of spanners to fasten the pipe joints at side of indoor unit.



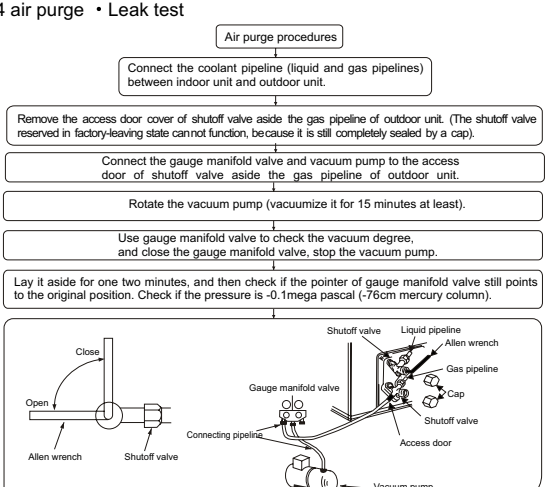
Pipeline diameter	Torque (N•M)
6.35mm(1/4")	13.7--17.6
9.52mm(3/8")	34.3--41.2
12.7mm(1/2")	49.0--56.4
15.88mm(5/8")	73.0--78.0

②Pipe connection of outdoor unit

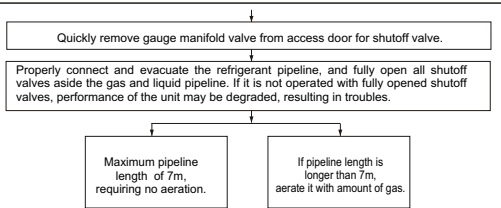
As per the same method for indoor unit, connect the fitting pipe to pipe joint. of shutoff valve (2-way and 3-way valves) on outdoor unit.

• Use torque -adjustable spanner or wrench to fasten it at same moment as that for indoor unit.

4-4 air purge • Leak test


Air purge procedures
Connect the coolant pipeline (liquid and gas pipelines) between indoor unit and outdoor unit.
Remove the access door cover of shutoff valve aside the gas pipeline of outdoor unit. (The shutoff valve reserved in factory-leaving state cannot function, because it is still completely sealed by a cap).
Connect the gauge manifold valve and vacuum pump to the access door of shutoff valve aside the gas pipeline of outdoor unit.
Rotate the vacuum pump (vacuumize it for 15 minutes at least).
Use gauge manifold valve to check the vacuum degree, and close the gauge manifold valve, stop the vacuum pump.
Lay it aside for one two minutes, and then check if the pointer of gauge manifold valve still points to the original position. Check if the pressure is -0.1mega pascal (-76cm mercury column).
Close
Open
Allen wrench
Shutoff valve
Shutoff valve
Liquid pipeline
Allen wrench
Gas pipeline
Cap
Gauge manifold valve
Shutoff valve
Connecting pipeline
Access door
Vacuum pump

VI. Installation instructions


Quickly remove gauge manifold valve from access door for shutoff valve.
Properly connect and evacuate the refrigerant pipeline, and fully open all shutoff valves aside the gas and liquid pipeline. If it is not operated with fully opened shutoff valves, performance of the unit may be degraded, resulting in troubles.
Maximum pipeline length of 7m, requiring no aeration.
If pipeline length is longer than 7m, aerate it with amount of gas.
Screw down the access door cover to get the initial state.
And then screw down the cap.
Leak test

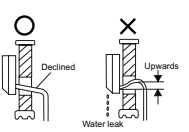
	Screwing-down torque	
	(N・m)	(Kgf・cm)
Access door cover	13.7～17.7	140～180
Valve rod cap of shutoff valve	19.6～29.4	200～300

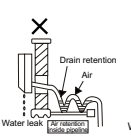
4-5 Insulation and bandage wrapping

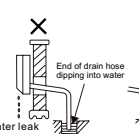
① Cover the fitting pipe sleeve by pipe cap;
② All fitting pipes and valves of outdoor unit should be heat-insulated;
③ All fitting pipes from the fitting pipe entry of outdoor unit must be wrapped with pipeline bandage;
- Fix the ends of pipeline bandage by tapes applied with adhesive;
- if fitting pipe passes ceiling board, lavatory or other place with high temperature and humidity, the thickness of heat-insulating material should be increased for fear of condensation.

4-6 Arrangement of drain pipeline

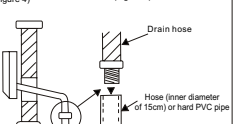
- For easier drainage through drain pipeline, ensure that the drain pipeline should be positioned in a declined mode (as shown in Figure 1).
  Do not connect the drain pipeline in the same way as shown in Figure 2 - Figure 5.







- If the length of drain hose assembled on the indoor unit is too short for operation, just connect the drain hose in the attachment box to it for operation.
- If the drain hose has to pass the indoor spaces, it must be wrapped with heat-insulating material available in the market.

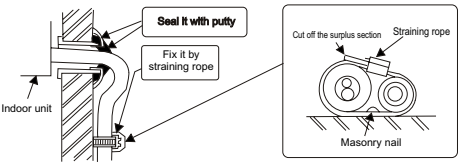


VI. Installation instructions

4-7 Wall hole sealing and pipeline fixing

①.Seal the wall hole with putty;

②.Use straining rope to fix the pipeline at appointed position.



4-8 Test run

Note:

1. Before test run, it is required to check once again if there is any incorrect wire connection, and check if any leak occurs in the pipe joint (by soap water).
2. It is possible to start up the unit by pressing emergency operation switch. Once the emergency operation switch is pressed, the unit will begin continuous test run in cooling mode for 30 minutes. Within the 30 minutes, the preset temperature does not work; after the 30 minutes, the unit will begin emergency operation in cooling mode at a certain preset temperature (24℃).

Test run procedures:

1. Press the emergency operation switch for the first time, the air conditioner begins emergency cooling operation; press the switch for the second time, the air conditioner stops all operations.
2. Press the ON/OFF button on the remote controller, and check if the indoor unit gives out a sound "toot"; if yes, it indicates that the remote controller can function, and the emergency operation is released. After that, press every button on the remote controller, and check if operation modes of the unit vary respectively.
(Emergency operating mode of air conditioner can be displayed in the operation indicator.)

	Mode	Power indicator
①	Cooling	(On)
②	Shutdown	

4-9 Explanations to the customers

- In accordance with the operation instructions, show the customers relevant methods for temperature adjustment, disassembling method for air filter, cleaning methods, installating and disassembling method for remote controller, and precautions during operation.
- Urge and demand the customers to read the operation instructions.

5. Displacing installation and maintenance after initial installation

5-1 How to fix the face plate

①Before installation of front panel, please set vertical vane at the position as shown on Figure 1.

②Close the front panel and match the panel with the unit.

③Gently press emergency switch on the front panel and see if the emergency button is properly matched with inside emergency switch

④Fix screw and fix the front panel on the air-conditioner and replace the screw cover.

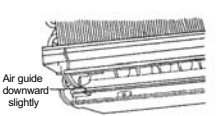


Figure 1

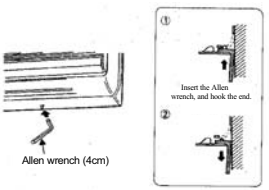
VI. Installation instructions

5-2 Disassembly of indoor unit

Release the bottom edge of indoor unit from the mounting plate.

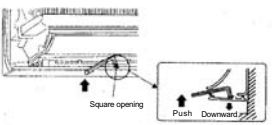
Use Allen wrench

As shown in Figure below, use Allen wrench to pull downward the bottom edge of indoor unit, and then pull out the unit slight so as to release the bottom buckles;.



In case the method in left column cannot be taken

If the method cannot be taken, just remove the face plate. As shown in Figure below, insert the allen wrench into the left and right square openings; and then push the allen wrench upward so as to descend the indoor unit,



5-3 Refrigerant replenishment

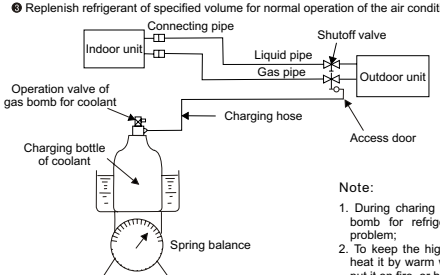
If connecting pipe length is over 7m, refrigerant replenishment is required.
Refrigerant replenishing volume for cooling/heating unit are listed as follow: A = 15g/m * (L-7) .
(A in the formula indicates the refrigerant replenishing volume in g; L indicates connecting pipe length in m)

Pipe length (m)	7	8	9	10	15
Refrigerant replenishing volume for unit(g)	0	15	30	45	60

Note: maximum length of connecting pipe for models 25 Series must not be longer than 10m, and the maximum length of connecting pipe for models 35/50/70 Series must not be longer than 15m.

Detailed operation steps are listed as follow:

❶ Align and connect the gas bomb onto access door of gas valve;
❷ Carry out the air purge for pipeline (or hose) from gas bomb of refrigerant;
❸ Replenish refrigerant of specified volume for normal operation of the air conditioner.



Note:

1. During charing operation, do not turn over the gas bomb for refrigerant replenishing for fear of any problem;
2. To keep the high pressure in the gas bomb, please heat it by warm water (40℃) in cold seasons. Do not put it on fire, or heat it by hot steam.

VII. Troubleshooting

1. Precautions for malfunction repair:

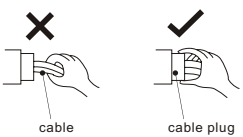
(1) Before repairing, check the power supply to see if it is normal, also check the connection of indoor and outdoor units to see if there is any error in connection.

(2) Play attention to the following items during repair:

①Before disassembling the front panel, unit box, top plate and control panel, disconnect the power supply.

②When moving the control panel, please hold its edges, don't press any components.

③When disassembling and installing connecting cable, please hold the plug instead of pulling the cable.



(3) Pay attention to the following items during fault handling

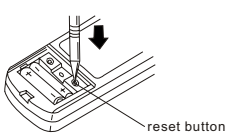
①Check the operation pilot lamp on the indoor unit to see if it's flashing, and confirm the fault indication by 2 or 3 times.

②If the fault is in the control panel, check its components to see if components burnout or turned colors, and check the connection terminal to see if the connection is correct.

③When a fault occurs, make check and repair according to "Troubleshooting Flow Chart" and "Table for Fault Handling and Repairing".

(4) Replace batteries for remote controller

Old batteries will affect normal operation, old batteries must be replaced.
After replacing, press the "reset" button on the back of the remote controller.

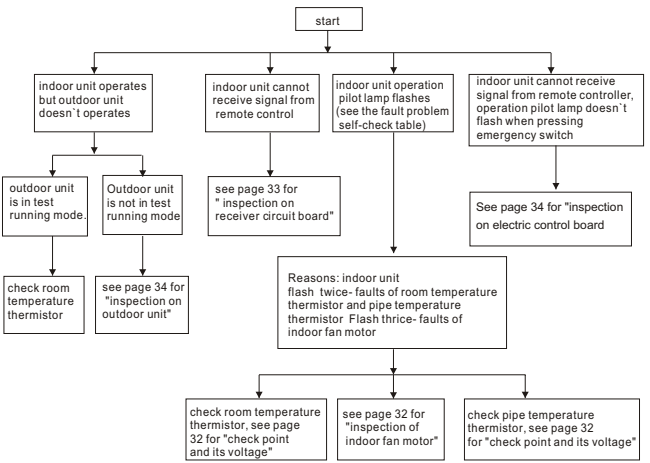


(5) Special attention:

Indoor unit may not receive signals from remote controller in room with florescent light because periodically-connected high-voltage manostat or blocking oscillator (electric rectifier) are used.

VII. Troubleshooting

2.Troubleshooting Flow Chart


start
indoor unit operates but outdoor unit doesn`t operates
indoor unit cannot receive signal from remote control
indoor unit operation pilot lamp flashes (see the fault problem self-check table)
indoor unit cannot receive signal from remote controller, operation pilot lamp doesn`t flash when pressing emergency switch
outdoor unit is in test running mode.
Outdoor unit is not in test running mode
see page 33 for " inspection on receiver circuit board"
See page 34 for "inspection on electric control board
check room temperature thermistor
see page 34 for "inspection on outdoor unit"
Reasons: indoor unit flash twice- faults of room temperature thermistor and pipe temperature thermistor Flash thrice- faults of indoor fan motor
check room temperature thermistor, see page 32 for "check point and its voltage"
see page 32 for "inspection of indoor fan motor"
check pipe temperature thermistor, see page 32 for "check point and its voltage"

VII.Troubleshooting

3. Trouble selfchecking table

Before troubleshooting, ensure that the symptom reoccurs for precise judgement.

9K/12K/18K

NO,	Trouble source	Trouble display	Double 8 of LED display	Symptom	Verifying method	Maintenance
1	Room temperature thermistor	Flickers twice and ON for 5 seconds repeatedly	E2	Outdoor unit fails to run	During operation, shortcircuit and open circuit the indoor room temperature thermistor for 2 seconds respectively.	• Check if the mistor is out of work • Reconnect the plug • Check the indoor circuit board
2	Indoor fan motor	Flickers thrice and ON for 5 seconds repeatedly.	E6	Indoor fan motor runs for 12 seconds and stops for 3 minutes. Motor is damaged,and fan fails to run.	When the indoor fan motor runs for the 12 seconds, it is impossible to emit feedback signal of rotation speed.	• unplug the plug CN211, measure the section between Cn121 ②—③ , and verify if signal is over 1.5V • Check the indoor electrical control board • Check the indoor fan motor • Replug the plug
3	Pipe-temperature thermistor	Flickers for four times and ON for 5 seconds repeatedly.	E1	Outdoor unitfails to run	During operation, shortcircuit and open circuit the indoor pipe-temperature thermistor for 2 seconds	• Check if the thermistor is out of work • Reconnect the plug • Check the indoor circuit board
4	Outdoor defrosting thermistor		E5	Outdoor unit doesn't operate	After compressor is started, defrost thermistor is connected or disconnected.	Check to see whether thermistor is ineffective. Reconnect socket. Check indoor circuit board.

VII.Troubleshooting

4. Fault standards of main components

Room temperature thermistor and pipe temperature thermistor

use instruments to measure the resistor (at 10-30℃)

Normal	Abnormal
8KΩ~20KΩ	short circuit or open circuit

commpressor

use instruments to measure the resistor (winding temperature at 20℃)

	Normal				Abnormal
	CSU-09HHAA	CSU-12HHAA	CSU-21HHAA	CSU-24HHAB	short circuit or open circuit
C-R	3.528Ω	2.0Ω	1.04Ω	0.885Ω	
C-S	2.510Ω	4.61Ω	2.860Ω	1.773Ω	

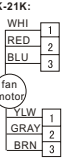
indoor fan motor

Power cable

use instruments to measure the resistor between connecting terminals (winding temperature at 10-30℃)

	Normal				Abnormal
	5K-9K	12K	18K-21K	24K	short circuit or open circuit
white-black	267Ω~327Ω	267Ω~327Ω	218Ω~266Ω	113Ω~138Ω	
black-red	295Ω~360Ω	295Ω~360Ω	217Ω~265Ω	87Ω~107Ω	

5K-21K:

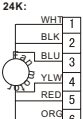


signal cable

Connect power, test voltage of cable

	Normal	Abnormal
brown-yellow	4.5V~5.5V	keep 0V or 5V
yellow-gray	fan turns once，0V—5V—0V	

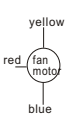
24K:



outdoor fan motor

Use instruments to measure the resistor between connecting terminals (winding resistance at 10-40℃)

Normal				Abnormal
5K-9K	12K	18K-21K	24K	short circuit or open circuit
315Ω~385Ω (red-blue)	103Ω~126Ω (red-blue)	76Ω~93Ω (red-blue)	33Ω~40Ω (red-blue)	
252Ω~308Ω (yellow-blue)	192Ω~235Ω (yellow-blue)	81Ω~100Ω (yellow-blue)	58Ω~70Ω (yellow-blue)	



stepper motor

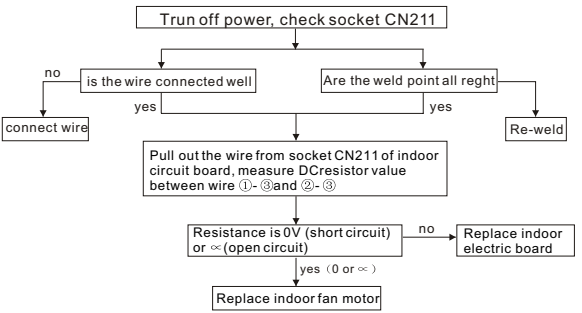
use instruments to measure the resistor (when at 10-30℃)

Normal	Abnormal
280Ω~320Ω	short circuit or open circuit

Normal	Abnormal
350Ω~400Ω	short circuit or open circuit

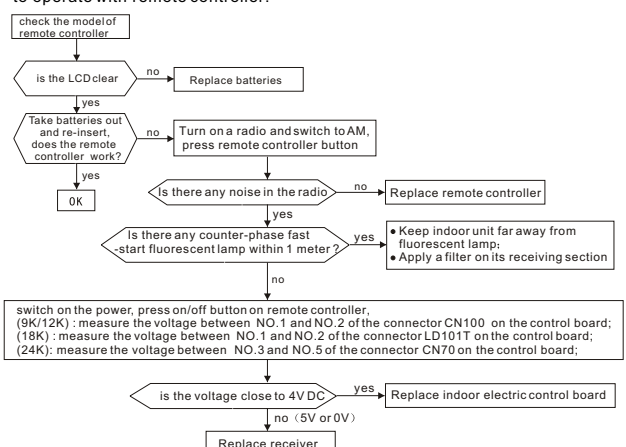
VII.Troubleshooting

A.Inspection of indoor fan motor (apply only to 9K/12K)


Trun off power, check socket CN211
no
is the wire connected well
Are the weld point all reght
yes
yes
connect wire
Re-weld
Pull out the wire from socket CN211 of indoor circuit board, measure DCresistor value between wire ①- ③and ②- ③
Resistance is 0V (short circuit) or ∝ (open circuit)
no
Replace indoor electric board
yes（0 or ∝）
Replace indoor fan motor

B. Inspection on the receiver circuit board

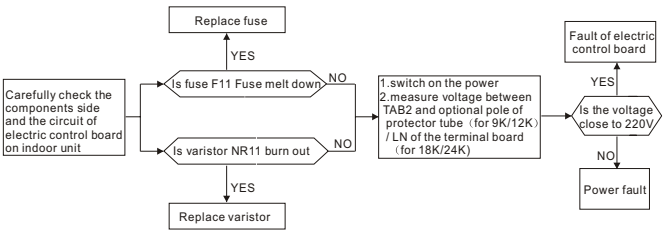
Indoor unit is able to operate when the emergency switch is pressed, but unable to operate with remote controller.


check the model of remote controller
is the LCD clear
no
Replace batteries
yes
Take batteries out and re-insert, does the remote controller work?
no
Turn on a radio and switch to AM, press remote controller button
yes
OK
Is there any noise in the radio
no
Replace remote controller
yes
Is there any counter-phase fast -start fluorescent lamp within 1 meter ?
yes
• Keep indoor unit far away from fluorescent lamp;
• Apply a filter on its receiving section
no
switch on the power, press on/off button on remote controller,
(9K/12K) : measure the voltage between NO.1 and NO.2 of the connector CN100 on the control board;
(18K) : measure the voltage between NO.1 and NO.2 of the connector LD101T on the control board;
(24K): measure the voltage between NO.3 and NO.5 of the connector CN70 on the control board;
is the voltage close to 4V DC
yes
Replace indoor electric control board
no（5V or 0V）
Replace receiver

VII.Troubleshooting

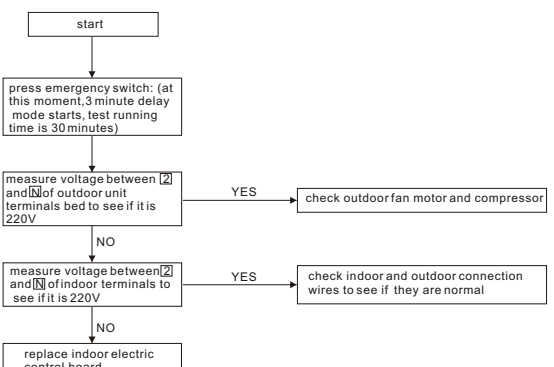
C.inspection on indoor electric control board

indoor remoter controller doesn`t work, at the same time, the operation pilot lamp is not lit when the emergency switch is pressed button


Replace fuse
YES
Carefully check the components side and the circuit of electric control board on indoor unit
Is fuse F11 Fuse melt down
NO
Is varistor NR11 burn out
NO
YES
Replace varistor
1.switch on the power
2.measure voltage between TAB2 and optional pole of protector tube （for 9K/12K） / LN of the terminal board （for 18K/24K)
Fault of electric control board
YES
Is the voltage close to 220V
NO
Power fault

D. Inspection of outdoor unit

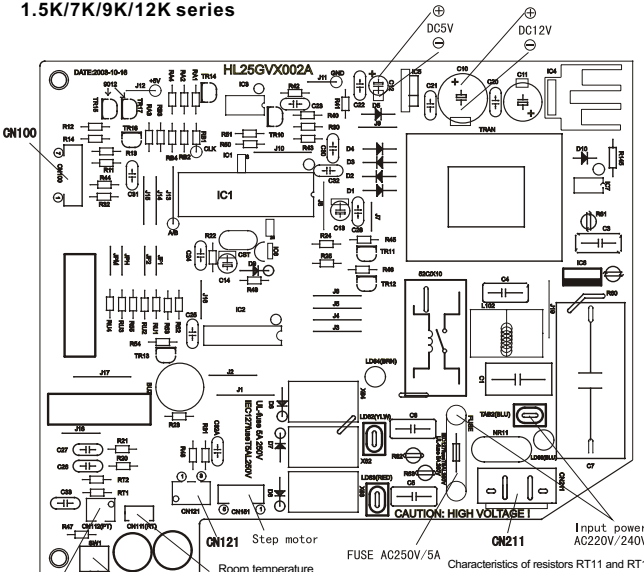
Compressor and outdoor fan don't operate (only indoor fan operates)


start
press emergency switch: (at this moment,3 minute delay mode starts, test running time is 30 minutes)
measure voltage between 2 and N of outdoor unit terminals bed to see if it is 220V
YES
check outdoor fan motor and compressor
NO
measure voltage between 2 and N of indoor terminals to see if it is 220V
YES
check indoor and outdoor connection wires to see if they are normal
NO
replace indoor electric control board

VII.Troubleshooting

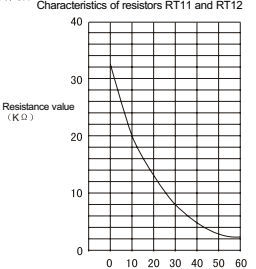
E. Location of detecting points and their voltage

1.5K/7K/9K/12K series



Indoor electrical control board

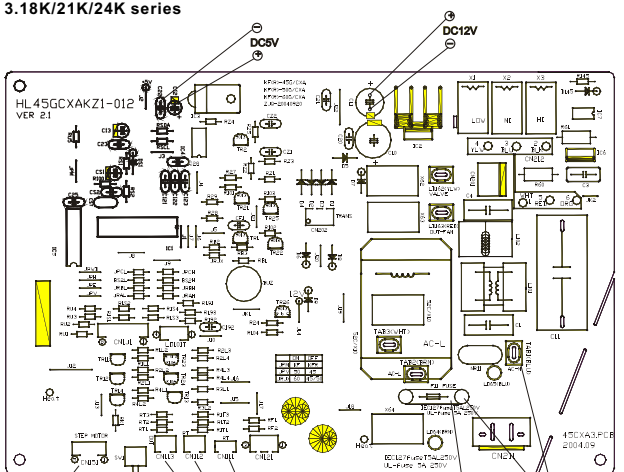
Characteristics of resistors RT11 and RT12



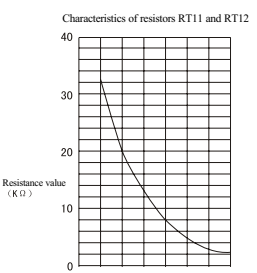
VII.Troubleshooting

E. Location of detecting points and their voltage

3.18K/21K/24K series

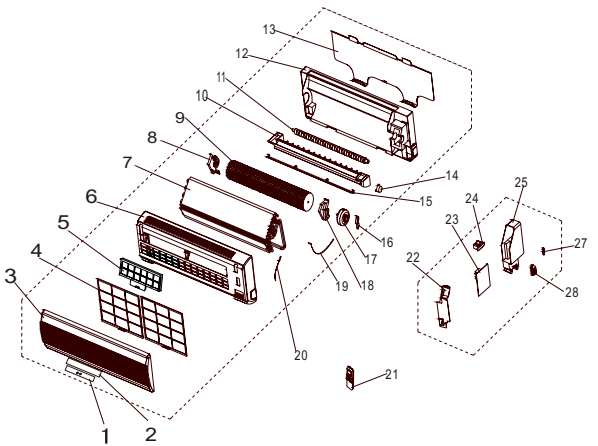


Indoor electrical control board



VIII.Parts list

H **indoor unit**



5K/7K/9K/12K **indoor unit**

No.	Name	Quantity	Code	Remark
1	Display board	1		
2	Box for display board	1		
3	Front panel	1		
4	Air filter	2		
5	Air filtert	Optional		
6	Panel frame	1		

VIII.Parts list

Number	Designation	Qty	Code	Remark
7	Evaporator	1		
8	Bearing holderl	1		
9	Cross flow fan ,assy	1		
10	Air out frame	1		
11	Drain hose	1		
12	Chassis	1		
13	Installation plate	1		
14	Louver motor	1		
15	Horizontal louverr	1		
16				
17	Fan motor	1		
18	Fixing part for motor	1		
19	Indoor temp. Sensor	1		
20	Evaporator temp. Sensor	1		
21	Wired controller	1		
22	E- part box cover	1		
23	Main control board	1		
24	Tranformer			
25	E-parts box	1		
26	Wire clamp for power cord	1		
27	Wire joint	1		

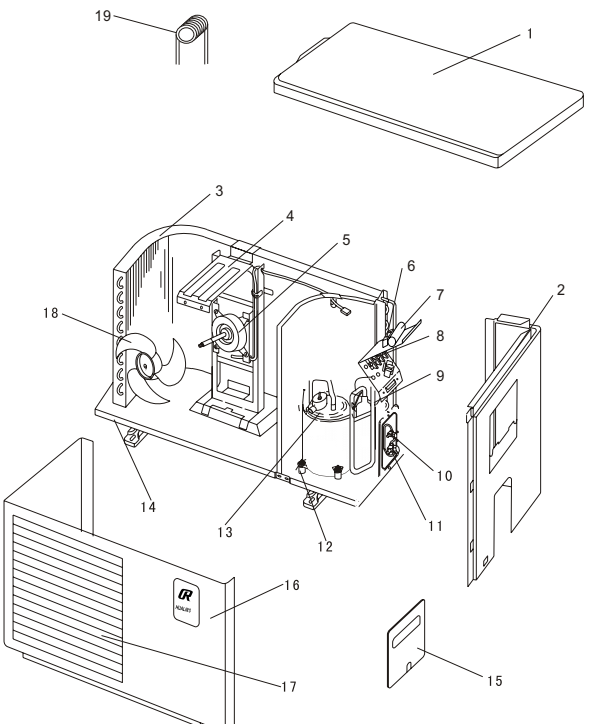
VIII.Parts list

18K/21K/24K indoor unit

No.	Name	Quantity	Code	Remark
1	Display board	1		
2	Box for display board	1		
3	Front panel	1		
4	Air filter	2		
5	Air filtert	Optional		
6	Panel frame	1		
7	Evaporator	1		
8	Bearing holderl	1		
9	Cross flow fan ,assy	1		
10	Air out frame	1		
11	Drain hose	1		
12	Chassis	1		
13	Installation plate	1		
14	Louver motor	1		
15	Horizontal louverr	1		
16				
17	Fan motor	1		
18	Fixing part for motor	1		
19	Indoor temp. Sensor	1		
20	Evaporator temp. Sensor	1		
21	Wired controller	1		
22	E- part box cover	1		
23	Main control board	1		
24	Tranformer			
25	E-parts box	1		
26	Wire clamp for power cord	1		
27	Wire joint	1		

VIII.Parts list

5K,7K,9K, series outdoor unit



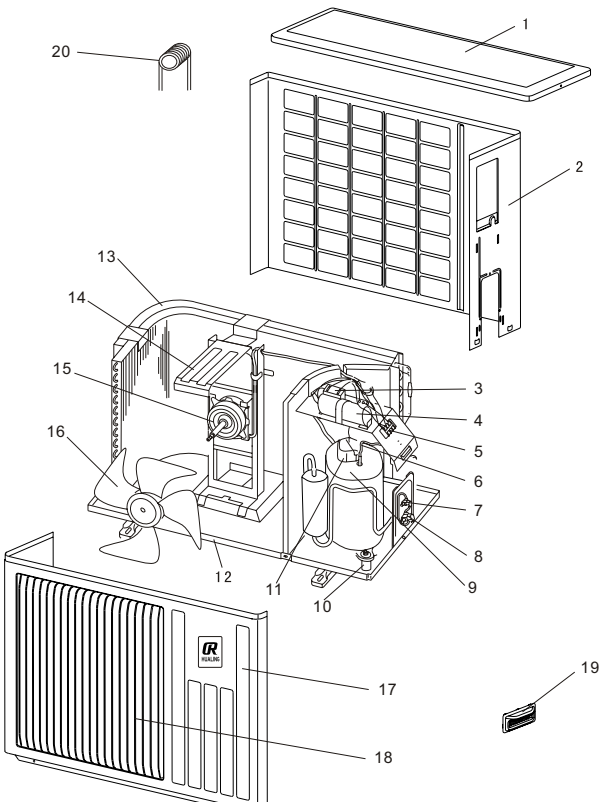
VIII.Parts list

5K/7K/9K series outdoor unit

Number	Designation	Qty	Code	Note
1	Top plate	1		
2	Right side plate	1		
3	Heat exchanger	1		
4	Motor mounting	1		
5	Fan motor	1	MF	YDK-20AF-6
6	Capacity of fan	1		1.5μF/450V
7	Capacity of compressor	1	C1	30μF/450V
8	Terminal block	1	TB	3
9	Return air pipe	1		
10	Shutoff valve (liquid)	1		1/4F
11	Shutoff valve (gas)	1		3/8F
12	Rubber shock absorber of compressor	3		
13	Compressor	1	MC	44R212AE-FJS
14	Base	1		
15	Maintenance panel	1		
16	Foreplate	1		
17	Outdoor grille	1		
18	Axial flow fan	1		
19	Capillary	1		

VIII.Parts list

12K,18K series outdoor unit



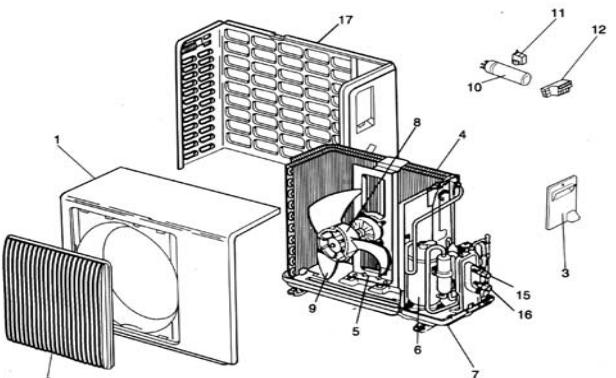
VIII.Parts list

12K;18K series outdoor unit

No.	Name	Quantity	Code	Remark
1	Top panel	1		
2	Roar plate	1		
3	Fan capacitor	1		2.0μF
4	Compressor capacitor	1	C1	40μF
5	Terminal board	1	TB	3
6	Process pipe	1		
7	Stop valve (liquid)	1		1/4F
8	Stop valve (gas)	1		1/2F
9	Upper cover of sound-proof pad	1		
10	Compressor anti-vibration pad	3		
11	Compressor	1	MC	44R332AK-5ES
12	Base support	1		
13	Heat exchanger	1		
14	Motor support	1		
15	Fan motor	1	MF	YDK-45M-6
16	Axial flow fan	1		
17	Front panel	1		
18	Outdoor grid	1		
19	Handle	1		
20	Capillary	1		See (page 9) cooling loop for detailed specification

VIII.Parts list

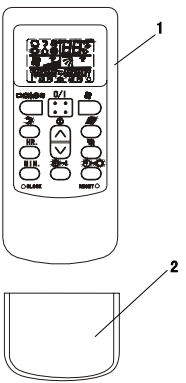
21K,24K series outdoor unit



No.	Name	Quantity	Code	Remark
1	Front panel	1		
2	Outdoor grid	1		
3	Maintenance board	1		
4	Outdoor heat exchanger	1		
5	Motor support	1		
6	Compressor	1	MC	48R502AQ+51S
7	Base support	1		
8	Outdoor fan motor	1	MF	YDK-50AB-6
9	Axial flow fan	1		
10	Compressor capacitor	1	C1	40μF
11	Outdoor fan capacitor	1		4.0μF
12	Terminal board	1	TB	4
13	Capillary	1		
14	Compressor rubber pad	3		
15	Stop valve (liquid)	1		1/4F
16	Stop valve (gas)	1		1/2F
17	Rear plate	1		

VIII.Parts list

Remote control and others



5K/7K/9K/12K/18K/21K/24K Series

No.	Name	Quantity	Code	Remark
1	Remote controller	1		
2	Battery cover	1		
3	Wrapping tape	1		
4	Screws	1		

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3、Installation.....5

4、Exploded view and part list..... 20

5、Operation principle..... 22

6、Parameter.....42

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8、Troubleshooting.....58

1. Summary

1.1 indoor unit

Model 77

1.2 outdoor unit

CS-23H3-V77AY1A CS-25H3-V**AY1A

CS-32H3-V**AH4

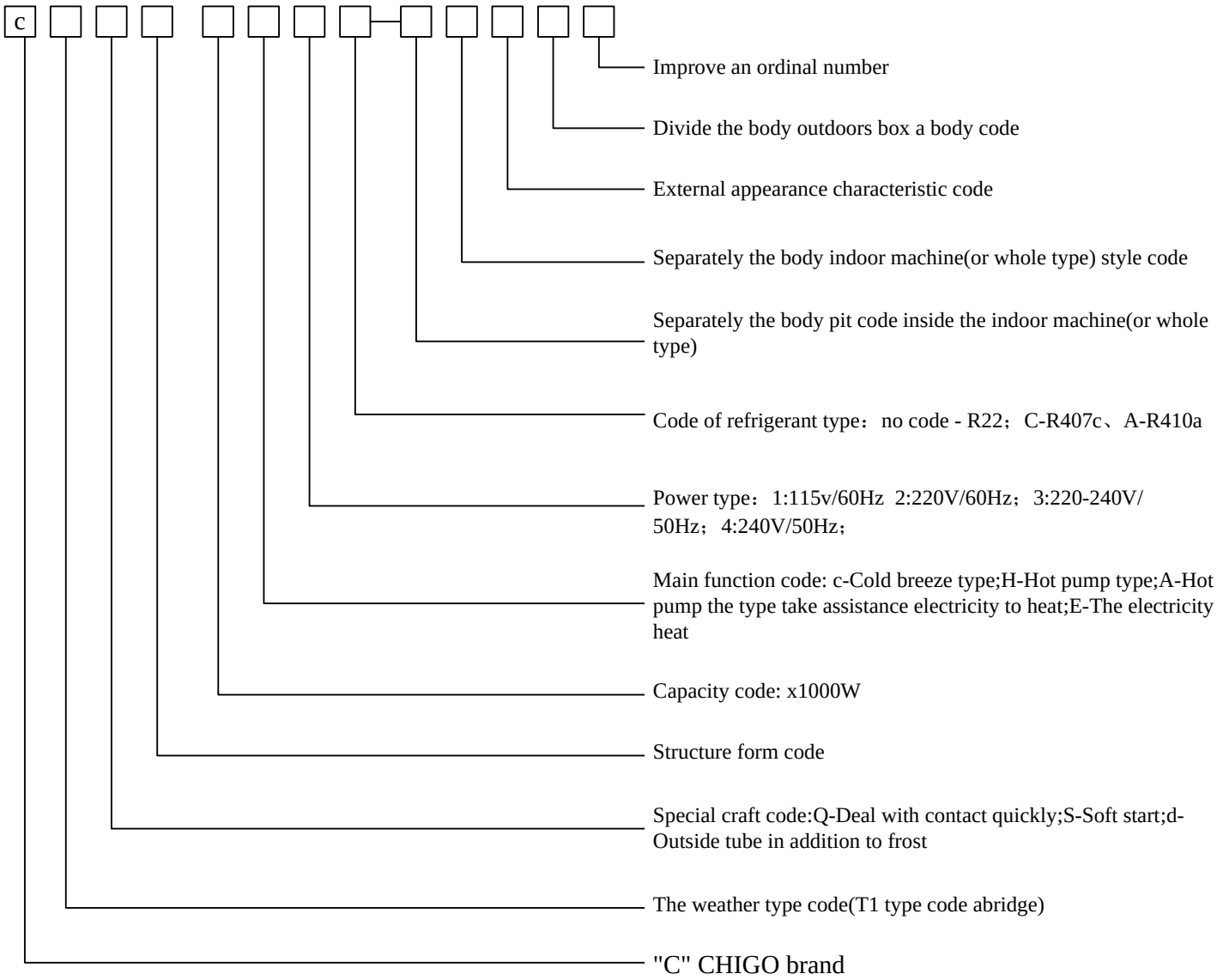
KFR-51GW/Bc

CS-66H3-N**AS

CS-88H3-Q**AT

model		CS-23H3-V77AY1A	CS-25H3-V**AY1A	CS-32H3-V**AH4	KFR-51GW/Bc
Net Dimension	indoor unit	746*245*196	746*245*196	746*245*196	940*270*180
	outdoor unit	700*225*500	700*225*500	795*255*540	795*255*540
model		CS-66H3-N**AS	CS-88H3-Q**AT		
Net Dimension	indoor unit	1000*320*200	1225*330*245		
	outdoor unit	870*310*700	900*330*835		

2、Model explaining


C
Improve an ordinal number
Divide the body outdoors box a body code
External appearance characteristic code
Separately the body indoor machine(or whole type) style code
Separately the body pit code inside the indoor machine(or whole type)
Code of refrigerant type：no code - R22；C-R407c、A-R410a
Power type：1:115v/60Hz 2:220V/60Hz；3:220-240V/50Hz；4:240V/50Hz；
Main function code: c-Cold breeze type;H-Hot pump type;A-Hot pump the type take assistance electricity to heat;E-The electricity heat
Capacity code: x1000W
Structure form code
Special craft code:Q-Deal with contact quickly;S-Soft start;d-Outside tube in addition to frost
The weather type code(T1 type code abridge)
"C" CHIGO brand

Model ：CS-25C3A-V85AY1

T1 climate type,wall split type air conditioner, cooling capacity is 2500W，power is 220V～/50Hz/1PH，refrigeration is R410A,the kernel of indoor unit is fresh 98，the pattern no. is 85，first time design, outdoor unit is 1HP of 2003 year。

Indoor unit modle is：CS-25C3A-V85A，outdoor unit model is：CS-25C3A-Y1。

3. Attention of installation

3.1 Safety Precaution

■To prevent injury to the user or other people and property damage, the following instructions must be followed.

■Incorrect operation due to ignoring instruction will cause harm or damage.

■Before service unit, be sure to read this service manual at first.

3.2 Warning

> Installation<

■Do not use a defective or underrated circuit breaker. Use this appliance on a dedicated circuit.

There is risk of fire or electric shock.

■For electrical work, contact the dealer, seller, a qualified electrician, or an Authorized service center.

Do not disassemble or repair the product, there is risk of fire or electric shock.

■Always ground the product.

There is risk of fire or electric shock.

■Install the panel and the cover of control box securely.

There is risk of fire of electric shock.

■Always install a dedicated circuit and breaker.

Improper wiring or installation may cause fore or electric shock.

■ Use the correctly rated breaker of fuse.

There is risk of fire or electric shock.

■Do not modify or extend the power cable.

There is risk of fire or electric shock.

■Do not install, remove, or reinstall the unit by yourself (customer).

There is risk of fire, electric shock, explosion, or injury.

■ Be caution when unpacking and installing the product.

Sharp edges could cause injury, be especially careful of the case edges and the fins on the condenser and evaporator.

■ For installation, always contact the dealer or an Authorized service center.

There is risk of fire, electric shock, explosion, or injury.

■Do not install the product on a defective installation stand.

It may cause injury, accident, or damage to the product.

■Be sure the installation area does not deteriorate with age.

If the base collapses, the air conditioner could fall with it, causing property damage, product failure, and personal injury.

■Do not let the air conditioner run for a long time when the humidity is very high and a door or a windows is left open.

Moisture may condense and wet or damage furniture.

■Take care to ensure that power cable could not be pulled out or damaged during operation.

There is risk of fire or electric shock.

■ Do not place anything on the power cable.

There is risk of fire or electric shock.

■Do not plug or unplug the power supply plug during operation.

There is risk of fire or electric shock.

■Do not touch (operation) the product with wet hands.

There is risk of fire or electric shock.

■Do not place a heater or other appliance near the power cable.

There is risk of fire and electric shock.

■Do not allow water to run into electric parts.

It may cause fire, failure of the product, or electric shock.

■Do not store or use flammable gas or combustible near the product.

There is risk of fire or failure of product.

■ Do not use the product in a tightly closed space for a long time.

Oxygen deficiency could occur.

■When flammable gas leaks, turn off the gas and open a window for ventilation before turn the product on.

Do not use the telephone or turn switches on or off. There is risk of explosion or fire.

■If strange sounds, or small or smoke comes from product. Turn the breaker off or disconnect the power supply cable.

There is risk of electric shock or fire.

■Stop operation and close the window in storm or hurricane. If possible, remove the product from the window before the hurricane arrives.

There is risk of property damage, failure of product, or electric shock.

■Do not open the inlet grill of the product during operation. (Do not touch the electrostatic filter, if the unit is so equipped.)

There is risk of physical injury, electric shock, or product failure.

■When the product is soaked (flooded or submerged), contact an Authorized service center.

There is risk of fire or electric shock.

■Be caution that water could not enter the product.

There is risk of fire, electric shock, or product damage.

■ Ventilate the product from time to time when operating it together with a stove, etc.

There is risk of fire or electric shock.

■Turn the main power off when cleaning or maintaining the product.

There is risk of electric shock.

■When the product is not be used for a long time, disconnect the power supply plug or turn off the breaker.

There is risk of product damage or failure, or unintended operation.

■Take care to ensure that nobody could step on or fall onto the outdoor unit.

This could result in personal injury and product damage.

›CAUTION‹

■Always check for gas (refrigerant) leakage after installation or repair of product.

Low refrigerant levels may cause failure of product.

■Install the drain hose to ensure that water is drained away properly.

A bad connection may cause water leakage.

■ Keep level even when installing the product.

To avoid water leakage from vibration。

■Do not install the product where the noise or hot air from the outdoor unit could damage the neighborhoods.

It may cause a problem for your neighbors.

■ Use two or more people to lift and transport the product.

Avoid personal injury.

■Do not install the product where it will be exposed to sea wind (salt spray) directly.

It may cause corrosion on the product. Corrosion, particularly on the condenser and evaporator fins, could cause product malfunction or inefficient operation.

>Operation <

■Do not expose the skin directly to cool air for long periods of time. (Do not sit in the draft).

This could harm to your health.

■ Do not use the product for special purposes, such as preserving foods, works of art, etc. It is a consumer air conditioner, not a precision refrigerant system.

There is risk of damage or loss of property.

■ Do not block the inlet or outlet of air flow.

It may cause product failure.

■ Use a soft cloth to clean. Do not use harsh detergents, solvents, etc.

There is risk of fire, electric shock, or damage to the plastic parts of the product.

■ Do not touch the metal parts of the product when removing the air filter. They are very sharp.

There is risk of personal injury.

■ Do not step on pr put anything on the product. (outdoor units)

There is risk of personal injury and failure of product.

■Always insert the filter securely. Clean the filter every two weeks or more often if necessary.

A dirty filter reduces the efficiency of the air conditioner and could cause product malfunction or damage.

■Do not insert hands or other object through air inlet or outlet while the product is operated.

There are sharp and moving parts that could cause personal injury.

■ Do not drink the water drained from the product.

It is not sanitary could cause serious health issues.

■ Use a firm stool or ladder when cleaning or maintaining the product.

Be careful and avoid personal injury.

■ Replace the all batteries in the remote control with new ones of the same type. Do not mix old and mew batteries or different types of batteries.

There is risk of fire or explosion.

■ Do not recharge or disassemble the batteries. Do not dispose of batteries in a fire.

They may burn of explode.

■ If the liquid from the batteries gets onto your skin or clothes, wash it well with clean water. Do not use the remote of the batteries have leaked.

The chemical in batteries could cause burns or other health hazards.

3.3 Installation details

■ Wrench torque sheet for installation

Outside diameter		Torque
mm	inch	Kg.m
φ6.35	1/4	1.8
φ9.52	3/8	4.2
φ12.7	1/2	5.5
φ15.88	5/8	6.6
φ19.05	3/4	6.6

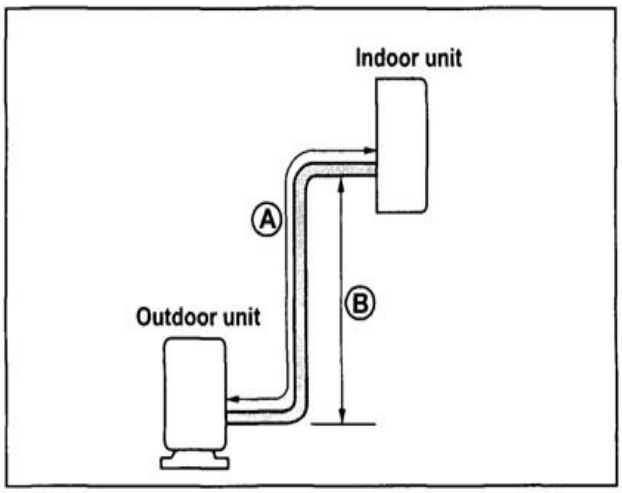
■Connecting the cables

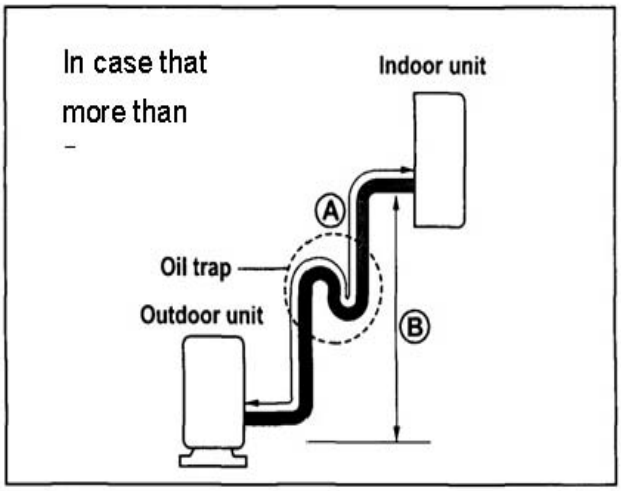
The power cord of connect should be selected according to the following specifications sheet.

	Grade					
Unit	7K	9K	12K	18K	24K	28K
mm2	1.0	1.0	1.5	2.5	2.5	2.5

■ Pipe length and the elevation

Capacity	Pipe size		Standard length	Max.	Max.	Additional refrigerant
			(m)	Elevation	Elevation	
Btu/h	GAS	LIQUID		B (m)	A (m)	(g/m)
9K-12K	3/8'' (φ9.52)	1/4'' (φ6.35)	3.5	5	10	30
18K-22K	1/2'' (φ12.7)	1/4'' (φ6.35)	4	10	15	30
24K-28K	5/8'' (φ15.88)	3/8'' (φ9.52)	5	15	20	65





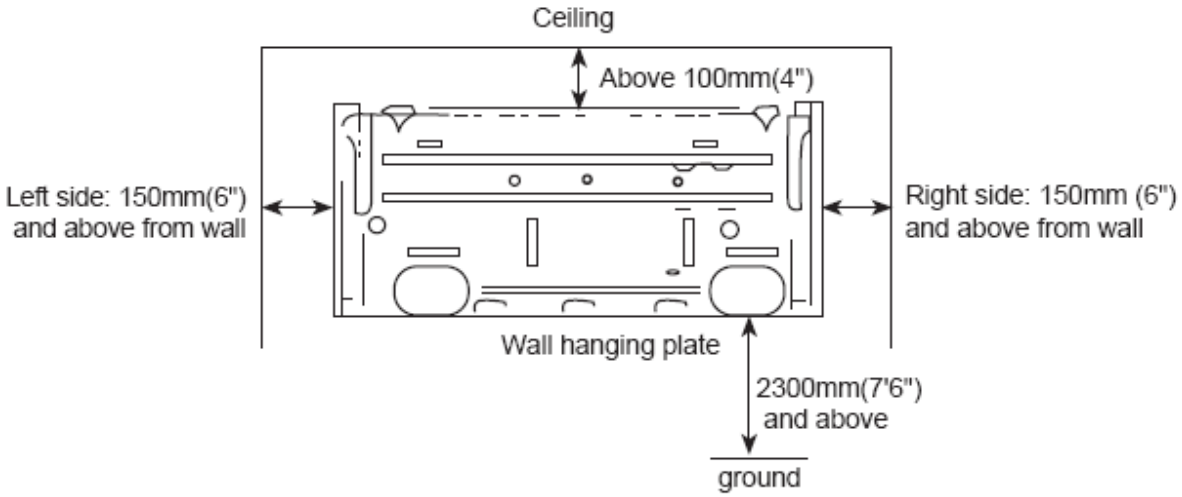
Caution: Capacity is base on standard length and maximum allowance length is base of reliability .Oil trap should be installed per 5-7 meters.

Selection of installation positions for indoor unit

* To be installed at the position where the air delivered from the unit can reach every corner of the room;
* To avoid being affected by the outdoor air;
* To avoid blockage to the air inlet or outlet of the unit;
* To avoid too much oil smoke or steam;
* To avoid possible generation, inflow, lingering or leakage of flammable gases;
* To avoid high-frequency facilities (such as high frequency arc welders, etc.);
* To avoid the places where acid solutions are frequently used;
* To avoid the places where some special sprayers (sulfides) are frequently used.
* Not to install on top of the musical instruments,TV,computer etc.valuable appliance.
* Not to install a fire alarming device near the air outlet of the unit (during operation, the fire alarm device might be erroneously triggered by the warm air from the unit);

* Make sure of enough space for installation and maintenance.

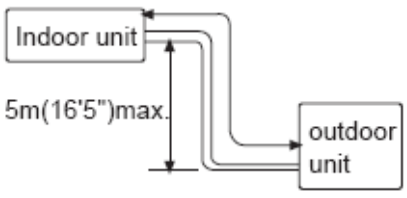
* To take into consideration the operational convenience and safety in installation, it is recommende to ensure enough space between the unit and the walls.



Attention:If there are some additional function devices to install on the air conditioner,Be sure add to the installation space for the function devices.

* Height limits of indoor and outdoor units.

* Either the indoor unit or the outdoor unit can be higher, but the height difference must comply the stated requirements.
* Try to reduce the bending of the piping line as much as possible so as to avoid possible negative impacts upon the performances of the units.

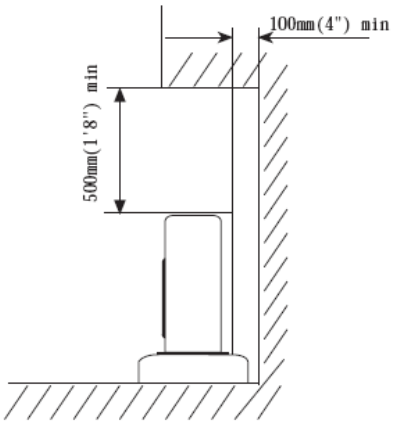


Selection of installation positions for outdoor unit

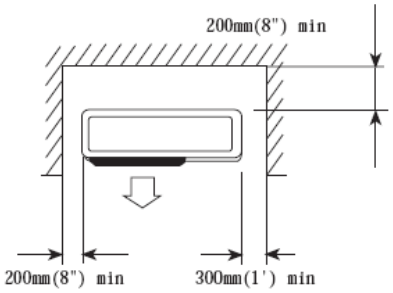
- To install the outdoor unit at the places which can stand the load of the machine weight and will not cause big vibrations and noises;
- To install the unit at the places not to be exposed to rain or direct sunshine, and the places with good ventilation;
- The noises generated from the unit will not affect the neighboring places;
- Do not install the unit on non-metal frame;
- Not to install the unit at the places where there might occur the generation, inflow, stay or leakage of inflammable gases;
- Pay attention to the drainage of the condensed water from the base plate during operations;
- To avoid the air outlet being directly against the wind.

Detailed space requirements around the outdoor unit

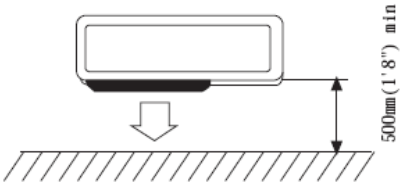
1. When there are obstacles above the unit



2. When the front (air outlet) is open

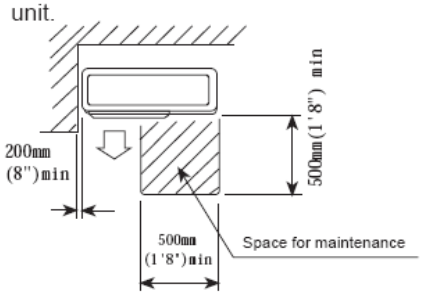


3. When there are

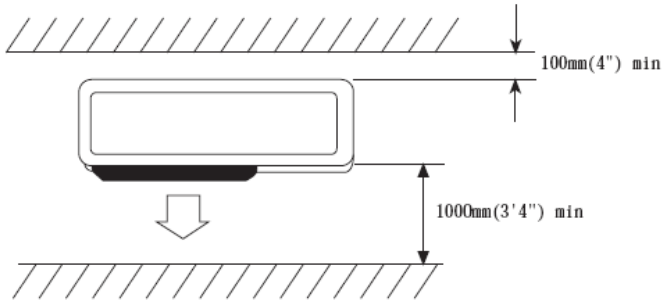


Space for maintenance

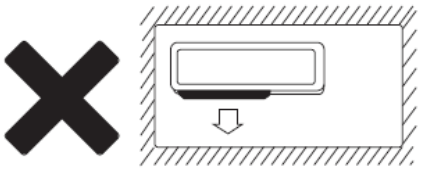
Shown as in the following figure. Keep the maintenance space in front of the unit.



4. When there are obstacles at the front and rear sides.



5. When there are obstacles all around the unit on four sides.
Although the top side is open, the installation is not to be done if there are obstacles all around.

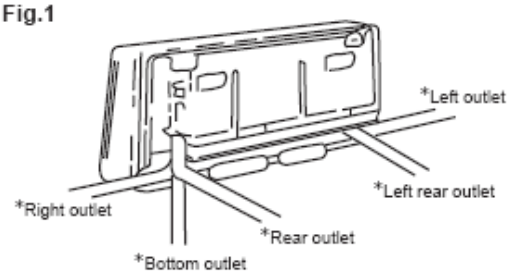


* At least two sides should be kept open.

Installation fixture of indoor unit

Pipelines can be connected in the directions of**** ****and* as indicated in Fig.1. When the pipelines are connected to the directions of***and*, a groove for the pipes has to be opened at the proper place on the base stand.

Fig.1



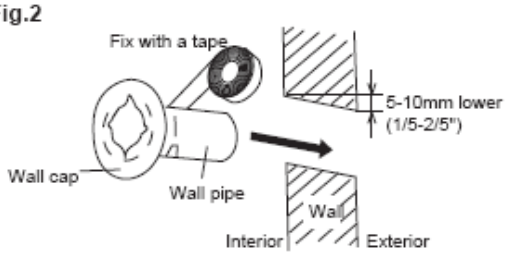
1.Installation of wall-mounting plate

Fix the wall-mounting plate firmly on the wall with screws. Make sure of the leveling of the plate. Slanted wall-mounting plate might jeopardize the smooth discharge of the condensed water.

2.Drill holes on the wall

Drill holes at places slightly below the wall-mounting plate, with hole diameter of 65mm(2-3/5") and the outer edge of the hole 5-10mm(1/5-2/5") lower (Fig.2) so that the condensed water can smoothly flow out. Cut the wall penetrating pipe to proper length according to the thickness of the wall (3-5mm(1/10-1/5") longer than the wall thickness) and insert the pipe as indicated in Fig.2.

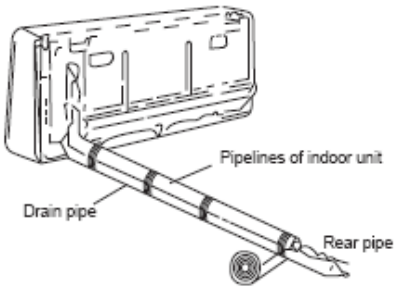
Fig.2



3.Installation of drain pipe

Install the pipelines of the indoor unit in accordance with the direction of the wall holes. Wrap tightly the drain pipe and the pipelines with tape. Make sure that the drain pipe is underneath the pipelines. (Fig.3) (When the drain pipe passes the room interior, some condensed water might occur to its surfaces if the humidity is very high).

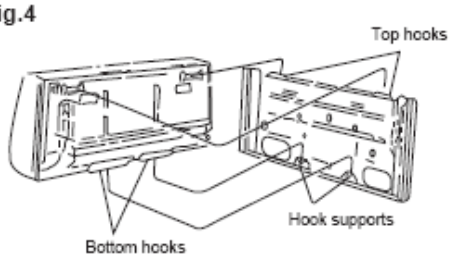
Fig.3



4.Installation of indoor unit

Pass the connection wires, connecting pipelines and drain pipe through the wall hole. Hang the indoor unit on the hooks at the top of the wall-mounting plate so that the hooks at the bottom of the indoor unit match the hooks of the wall-mounting plate. (Fig.4)

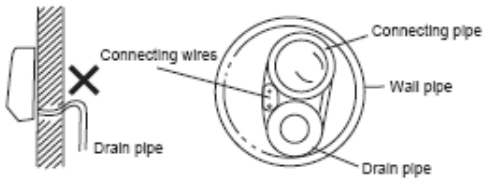
Fig.4



Inspections:

a. Check if the hooks at the top and bottom are firmly fixed.
b. Check if the position of the master unit is properly leveled.
c. The drain pipe should not curve upward (Fig.5).
d. The drain pipe should be at the lower part of the wall pipes (Fig. 5).

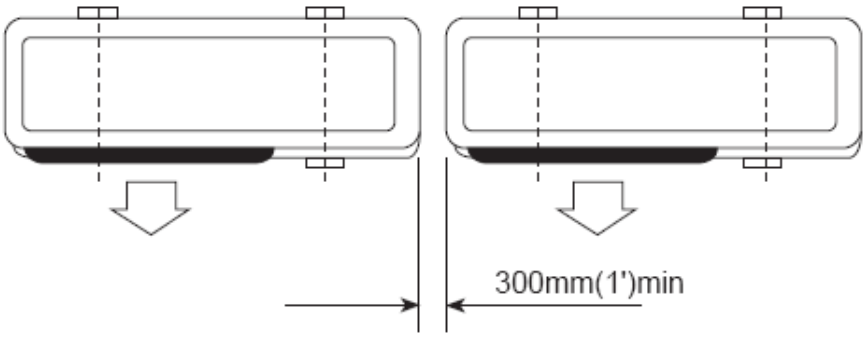
Fig.5



Installation fixture of outdoor unit

* Try to ship the product to the installation location in its original package;
* As the gravity center of the unit is not at the installation center, special caution should be taken when using hoisting cables to lift it up;
* During shipping, the outdoor unit must not be slanted to over 45 degrees (Do not store the unit in a horizontal way).
* Use expansion bolts to fix the mounting supports on the wall;
* Use bolts and nuts to fix the outdoor unit firmly on the supports and keep on the same level;
* If the unit is installed on the wall or at the rooftop, the supports have to be firmly fixed so as to resist earthquake or strong wind.

Dimensions for parallel units installations



*Ordinary pipelines connection & Air purging *

* **The following ordinary pipelines connection and air purging procedures are just suitable for non-quick coupler model.**

*Ordinary pipelines connection

No dust ,foreign articles,air or moisture should be allowed to enter the air conditioning system.Careful attention should be paid when pipeline connection for outdoor unit is made.Try to avoid repeated curves as much as possible,otherwise hardening or cracks might be caused to the copper pipes. Suitable wrenches should be used when the pipeline connection is done so as to ensure appropriate torque(refer to following torque Table 1).Excessive torque might damage the joints while too little torque might lead to leakage.

Table 1 Torque based upon the wrench to be used

Outer diameter of copper pipe	Tightening torque	Strengthened tightening torque
Ø 6.35(1/4")	160kgf.cm(63kgf.inch)	200kgf.cm(79kgf.inch)
Ø 9.52(3/8")	300kgf.cm(118kgf.inch)	350kgf.cm(138kgf.inch)
Ø 12.7(1/2")	500kgf.cm(197kgf.inch)	550kgf.cm(216kgf.inch)
Ø 15.88(5/8")	750kgf.cm(295kgf.inch)	800kgf.cm(315kgf.inch)
Ø 19.05(3/4")	1200kgf.cm(472kgf.inch)	1400kgf.cm(551kgf.inch)

*Air purging with vacuum pump

1.Check that pipelines connection have been properly connected,remove the charging port cap,and connect the manifold gauge and the vacuum pump to the charging valve by service hoses as shown Fig.6.

2.Open the valve of the low pressure side of manifold gauge,then,run the vacuum pump.Vacuum the indoor unit and the connecting pipes until the pressure in them lowers to below 1.5mmHG(The operation time for vacuuming is about 10 minutes).When the desired vacuum is reached,close the valve of the low pressure of the manifold and stop the vacuum pump.

3.Disconnect the service hoses and fit the cap to the charging valve.

4.Remove the blank caps,and fully open the spindles of the 2-way and 3-ways valves with a service valve wrench.

5.Tighten the blank caps of the 2-way and 3-ways valves,applying the above torque Table 1.

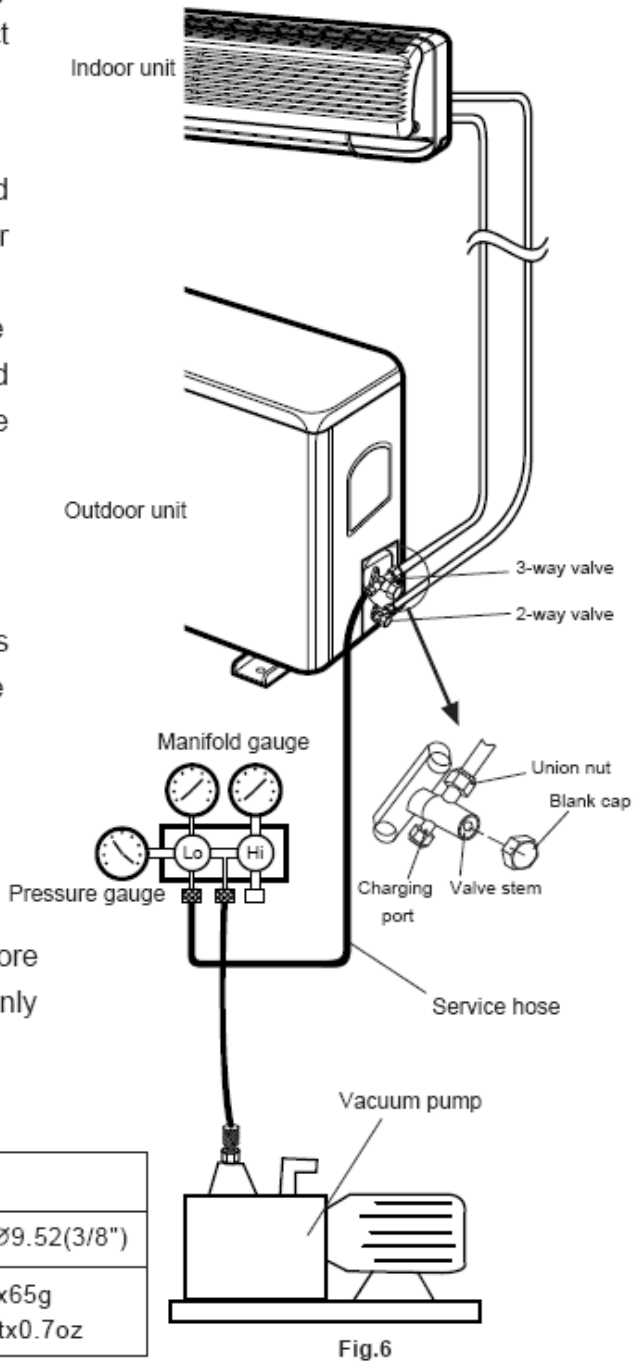


Fig.6

*Adding refrigerant

Refrigerant must be added if the piping measures more than 5 metres(16'5") in length.This operation can only be performed by a professional technician,for the additional amount,see the table 2 below.

Table 2

Additional refrigerant amount	
Liquid pipe diameter Ø6.35(1/4")	Liquid pipe diameter:Ø9.52(3/8")
(piping length-5)mx30g or (piping length-16)ftx0.3oz	(piping length-5)mx65g or (piping length-16)ftx0.7oz

*Gas leakage inspection

After the pipieline connection is done,use a leakage inspection device or soap suds to carefully check if there is any leakage at the joints.This is an imporant step to ensure the quality of installation.Once a leakage is detected,proper treatment should be taken immediately.

Pipelines connection for Split type quick coupler model

*** If you purchase the machine for split type quick coupler model,please adopt the following pipeplines connection procedures:**

1.Remove the dust caps from the indoor and outdoor units, and the connecting pipe.

2.Align the joint counter of connecting pipe with the proper indoor and outdoor joint conic surfaces,tighten the connecting nut manually.Then,make it secure with a wrench as shown Fig.7 ,applying to above torque Table 1.

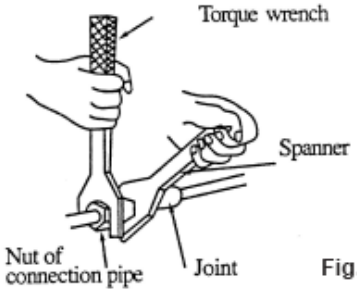


Fig.7

3.Remove the two valve core caps from the outdoor unit.

4.Turn on the high and low pressure valve cores with an socket wrench,then tighten the two valve core caps of the outdoor unit (Fig.8).

5.Finally ,wrap the hot insulating cotton around the joints of indoor and outdoor units.

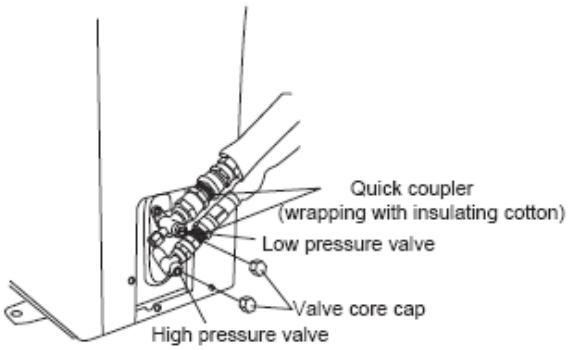


Fig.8

* Notes on installation of quick coupler:

1.Connecting pipe bending minimum radius parameters (Table 3)

2.Quick coupler assembly and disassembly limit: the assembly and disassembly times are inadvisably more than 7.

Table 3 Minimum bending radius

Normial diameter(mm)	Minimum bending radius(mm)	cooling capacity
DN8(5/16")	80(3")	2100~2300W (7000~8000BTU)
DN10-12 (1/2")	100(4")	2500~5100W (9000~18000BTU)
DN14-16 (5/8")	150(6")	6100~7000W (22000~24000BTU)

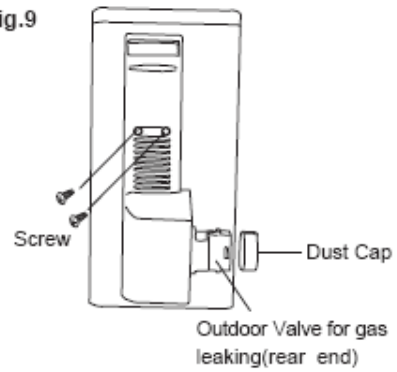
* Pipelines connection for Whole-Unit type quick coupler model *

*** If you purchase the machine for Whole-Unit type quick coupler model,please adopt the following pipeplines connection procedures:**

STEP 1

* Remove two screws on the maintance plate with a screwdriver and take off the plate,then remove the dust caps on both indoor male coupler and outdoor female coupler,See Fig.9.

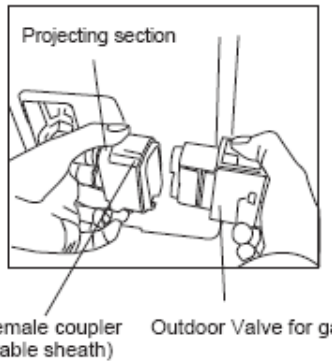
Fig.9



STEP 2

* Press the projecting section of outdoor female coupler backward with a little force by the thumb to make inner hooks open, and then you can easily take out the outdoor valve for gas leaking by the other hand,See Fig.10.

Fig.10



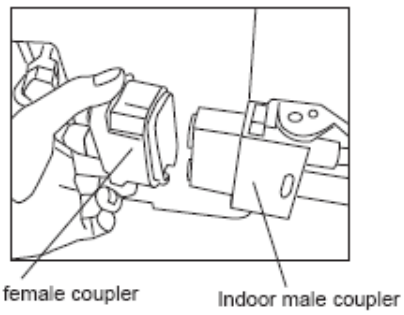
STEP 3

* In the same way,press the projecting section backward,then connect the indoor male coupler to the outdoor female coupler,See Fig.11.

STEP 4

* Close the key lever of indoor male coupler to the horizontal position,then indoor and outdoor refrigerant will be circulating,and now you can obvioulsy hear the sound of inner air flowing ,See Fig.12.

Fig.11



STEP 5

* Connect the outdoor quick cable coupler with indoor quick cable coupler,See Fig.13.

STEP 6

* Finally,Re-install the mainteance plate back into its place,See Fig.14.

As for the outdoor valve for gas leaking and the dust caps,you can preserve them for future possible use on the removal of your air conditioner.

Fig.12

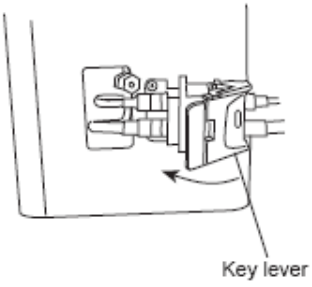
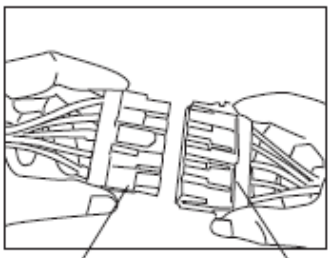
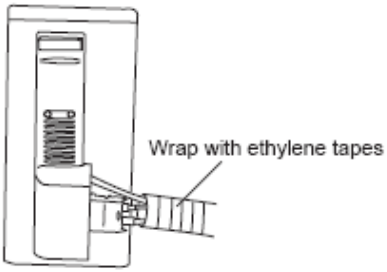


Fig.13



Outdoor quick cable coupler　　Indoor quick cable coupler

Fig.14



Connection of power cable

1.Remove the drawer of the outdoor unit.

2.**Non-quick coupler:**connect the indoor power and control wires with the matched outdoor wires in accordance with the electric schematic diagram and make sure that the connection is firmly done(Fig.15.)

Quick coupler:directly connect quick cable couplers with indoor and outdoor quick cable couplers after disassembly of the outdoor unit connecting box cover(Fig.16.)

3.Use a press plate to fix the wires firmly,and re-install the drawer.

4.Optional steps:In some cooling and heating models,you should connect the indoor wire connector with outdoor probe wire connector for defrosting,see Fig.17.

Fig.15

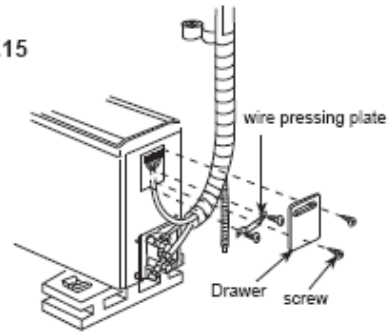


Fig.16

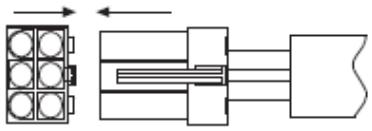
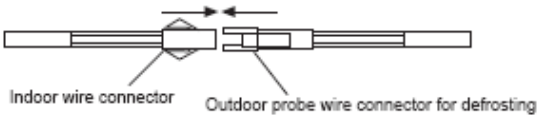


Fig.17



Note:Do not connect the wires in a wrong way,otherwise electric malfunctions will be caused and even damages to the units will occur.The appliance shall be installed in accordance with national wiring regulation.If the supply cord is damaged,it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard.The plug shall be accessible after installing the appliance.If the model have not plug that a switch which have a contact separation of at least 3 mm in all poles shalled be added in fixed wiring.

*Finishing touches *

* wrap the piplines tightly with ethylene tapes.
* Fix the wrapped pipelines on the exterior wall with clamps.
* Fill in the gaps left over by the pipeline hole and wall hole to prevent rain-water from entering.

Test running

* Connect to the power source,check if the function selection keys on the remote controller are working properly.
* Check if the room temperature adjustments and timer settings are working properly.
* Check if the drain is smooth.
* Check if there is any abnormal noise or vibration during operation.
* Check if there is leakage of refrigerant.

*Is the unit installed correctly? *

*Suitable Installation Position

*Isn't there anything which prevents ventilation or obstructs operation in front of the indoor unit ? Do not install the unit following place .
*Inflammable gases may leak .
*Oil splashes a lot .
*In case where the unit is used in such places as poisonous or sultry gases are generated or seaside district exposed to sea breezes corrosion may cause malfunction . Consult with your distributor .
*Air conditioner body and remote controller must be I m(39-3/4") or more away from a TV or a radio.
Drain the dehumidified water from the indoor unit to a place which drains well .

*Pay attention to operation noise

*When installing the unit , choose a place which can stand the weight of the unit well and does not increase the operation noise or vibration . Especially where there is a possibility that vibration be transmitted to the house , fix the unit by inserting attached vibration -proof pads between the unit and fittings .

*Choose the place where hot air and operation noise from the outlet of the outdoor unit do not annoy the neighborhood .
*Things left near the outlet and inlet of the outdoor unit cause malfunction or increased operation noise . Do not leave obstacles near the outlet and inlet .
*If irregular sound is heard during operation , consult with your distributor .

*Inspection and Maintenance

*According to the service conditions and operating environment , the inside of the air conditioner will become dirty after several seasons (3 to 5years) of service , resulting in decreased operating performance .Inspection and maintenance are recommended in addition to usual cleaning (The air conditioner can be used for a longer period and without anxiety .)
*As to inspection and maintenance , consult your dealer or any one of business offices of dealing companies .(Service charge is required in this case .)
*We recommend to perform inspection and maintenance during an off seasons.

*Quick connector installation instruction *

This sheet only guides the requirements of the installation for stainless quick connect pipe.Other installation requirements please refer to the installation guide along with th unit.

*To expand the connecting pipe,please hold one side then expand it following the right direction

*Please insure the angles have a radian at some extent while intalling the stainless soft pipe. Angels need to be around, not bended.(to the quick connecting spot and drilled point of wall.

*Please fix the stainless soft pipe while installing because the connecting pipes are soft, so that prevent them from getting bended or stretched.

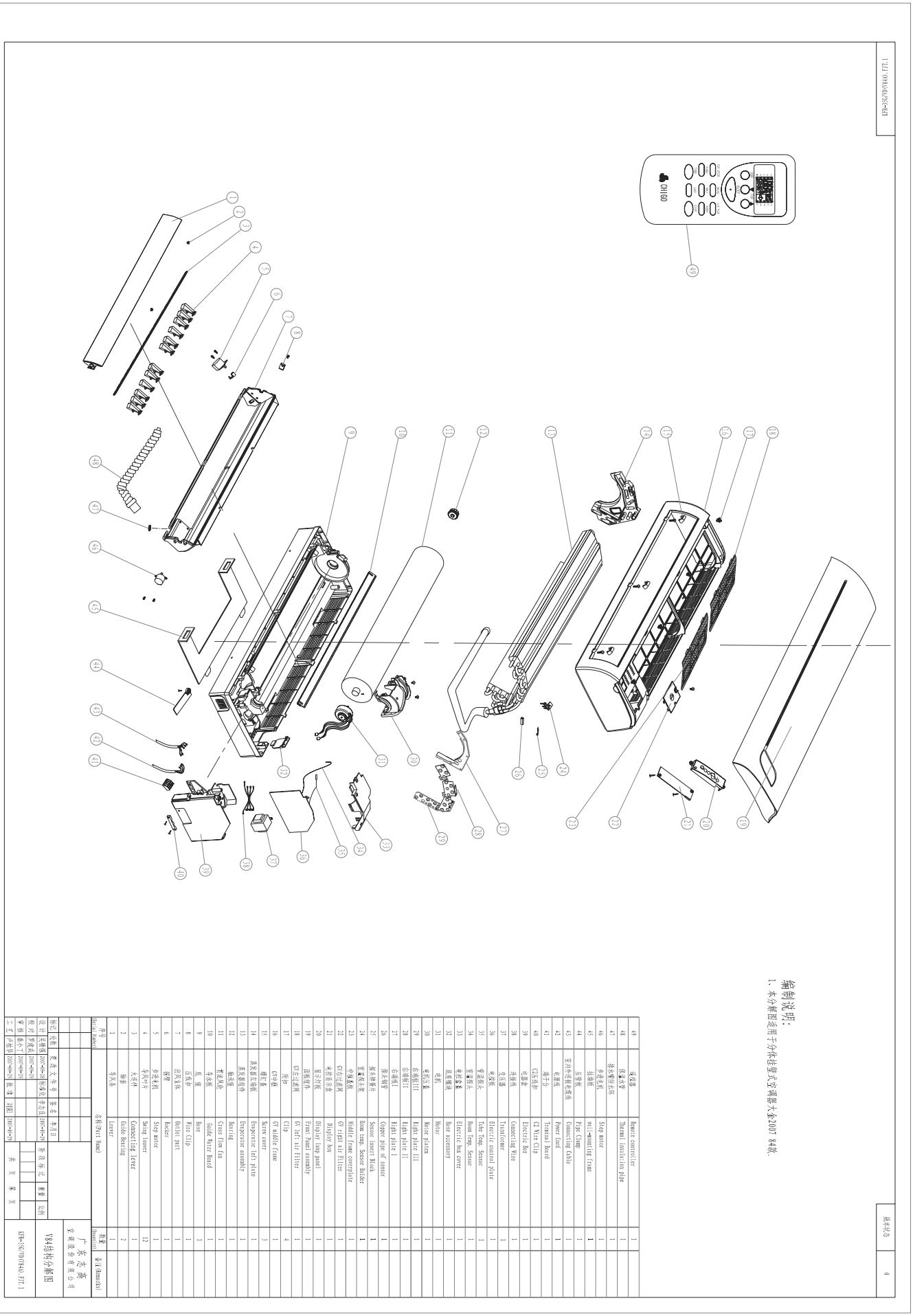
*The minimum bending radius are as follows:

Stainless soft pipe	*Model*	*Minimum bending radius(mm)*
**Eight*	Twenty-one,Twenty-five	Eighty(mm)
**Ten*	Thirty-five	One hundred(mm)
**Thirteen*	fifty-one	One hundred and fifteen(mm)

Installation Guide

To keep the allowed bending radius,please make the packed soft pipes vertical for expanding.			Please do not expand only one side of the packed soft pipes.
Please make use of semicircle pulley to keep the allowed bending radius.			Extremely bending could damage the pipes.
Please use twisting wheel to avoid improper bending.			Over length soft pipes will lead to irregular bending.
Please use rigid elbow to keep the bending radius while soft pipes operating.			Undersize bending will damage the soft pipe.
Please Keep the minimum bending radius while installing.			Short soft pipes will have them bending undersize,it's not allowed.

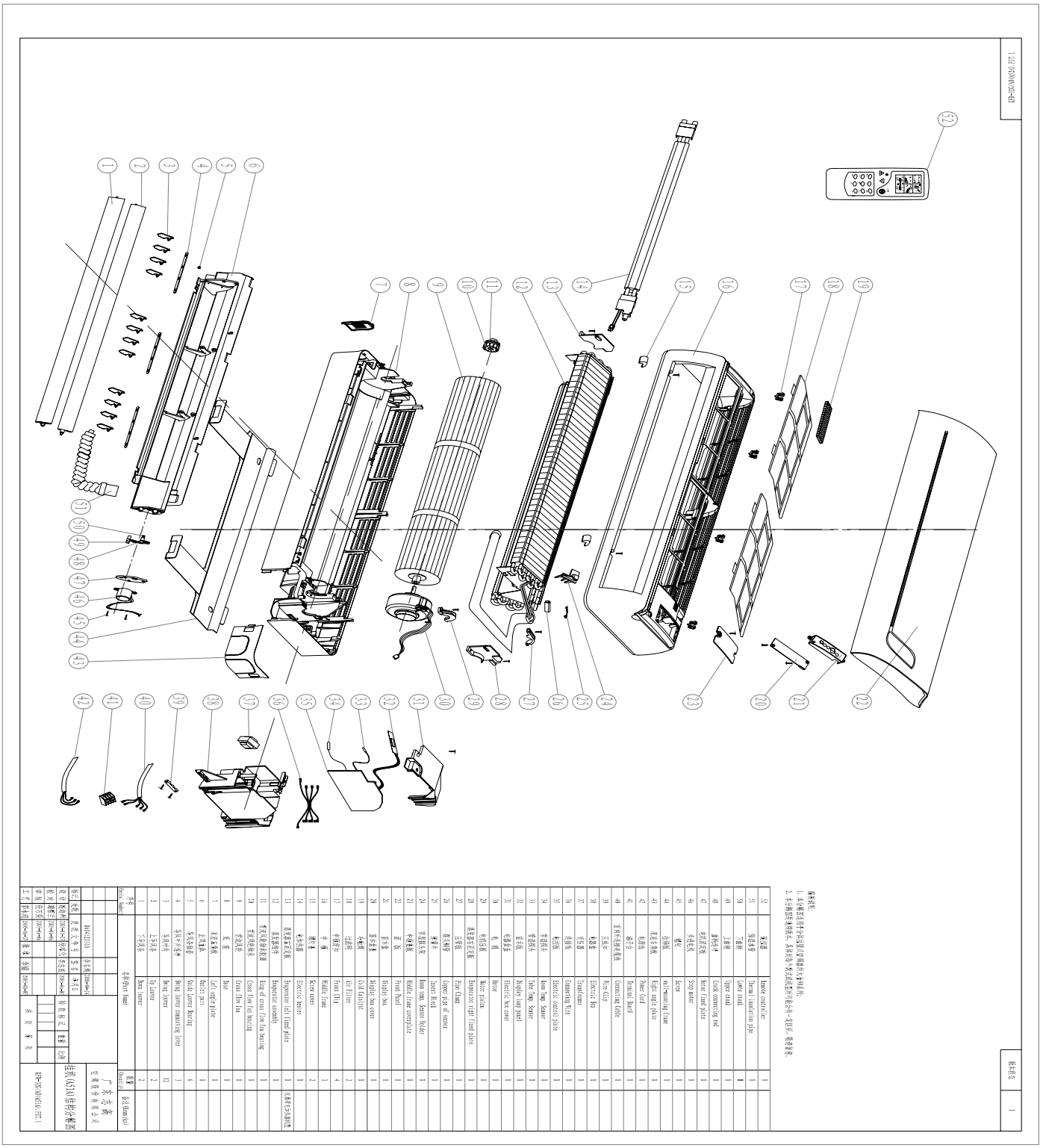
4、Indoor unit and outdoor unit explosion diagram and spare parts list



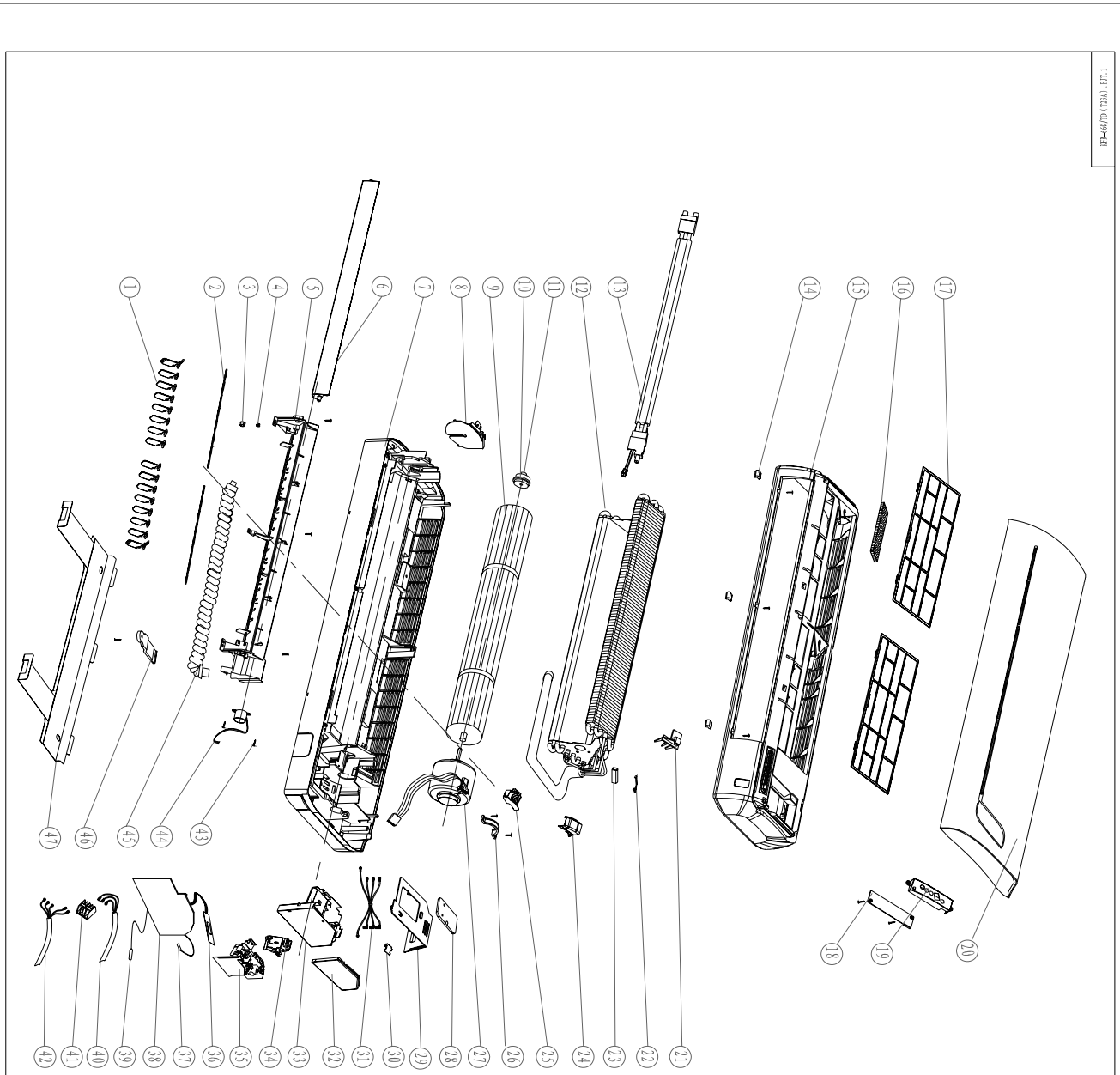
序号 Item No.	名称 Parts Name	数量 Quantity	备注 Remarks
49	遥控器	1	
48	隔水垫保温套		
	Thermal insulation pipe		
47	排水塑料软管	1	
46	步进电机	1	
45	挂壁板	1	
	Stop motor		
44	连管夹	1	
	wall-mounting frame		
43	室内外连接电缆线	1	
	Pipe Clamp		
42	电源线	1	
	Connecting Cable		
41	端子台	1	
	Power Cord		
40	C1压线卡	1	
	Terminal Board		
39	电盒盖	1	
	C1 Wire Clip		
38	连接线	1	
	Electric Box		
37	变压器	1	
	Connecting Wire		
36	电控板	1	
	Transformer		
35	管温感头	1	
	Electric control plate		
34	室温感头	1	
	Tube Temp. Sensor		
33	电盒盖组件	1	
	Room Temp. Sensor		
32	电盒附件	1	
	Electric Box cover		
31	电机	1	
	Base accessory		
30	电机压条	1	
	Motor		
29	右侧板III	1	
	Motor piston		
28	右侧板II	1	
	Right plate III		
27	右侧板I	1	
	Right plate II		
26	蒸发器铜管	1	
	Right plate I		
25	蒸发器铜管片	1	
	Copper pipe of sensor		
24	室温感头座	1	
	Sensor insert Block		
23	中框装饰板	1	
	Room temp. Sensor Holder		
22	CF右过滤网	1	
	Middle frame coverplate		
21	显示灯板	1	
	CF right air Filter		
20	显示灯罩	1	
	Display box		
19	面板组件	1	
	Display lamp panel		
18	CF左过滤网	1	
	Front Panel assembly		
17	卡扣	4	
	CF left air Filter		
16	CF中框	1	
	Clip		
15	螺钉盖	3	
	CF middle Frame		
14	蒸发器支架板	1	
	Screw cover		
13	蒸发器组件	1	
	Evaporator tab plate		
12	轴流风轮	1	
	Evaporator assembly		
11	贯流风轮	1	
	Bearing		
10	导水板	1	
	Cross Flow fan		
9	底盘	1	
	Guide Water Board		
8	后盖板	1	
	Base		
7	出风口左体	1	
	Wire Clip		
6	轴承	1	
	Outlet part		
5	步进电机	1	
	Bearing		
4	导风叶片	12	
	Step motor		
3	大连杆	1	
	Swing louver		
2	轴套	2	
	Connecting Lever		
1	导风条	1	
	Guide Bearing		
序号 Item No.	名称 Parts Name	数量 Quantity	备注 Remarks
	Louver		

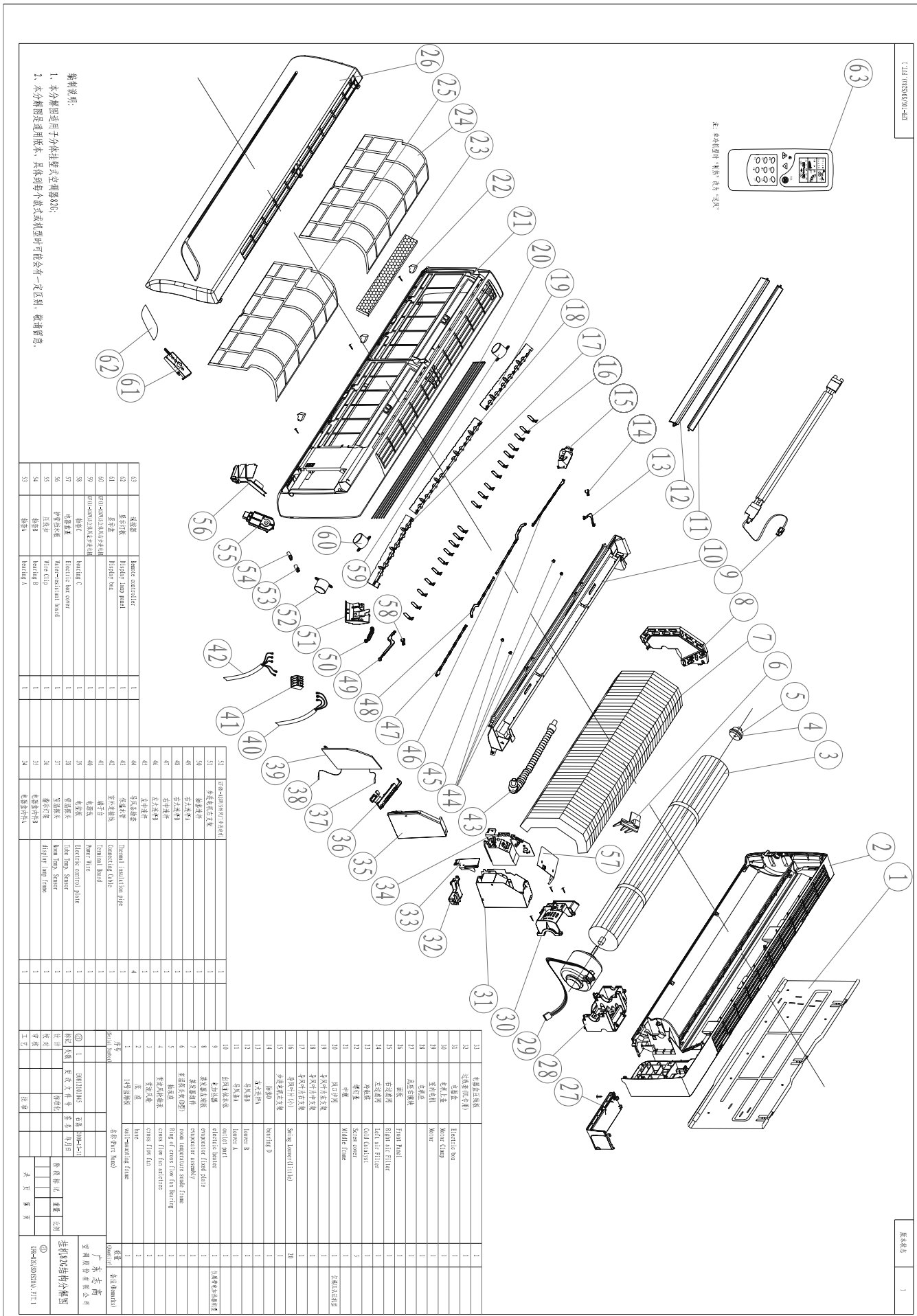
广东志高空调有限公司	图号	KFR-26G/DY(R4A)-FIT.1
分解图	规格	1匹
V4A结构分解图	日期	2007-04-19
	设计	刘国
	校对	张小二
	审核	李工
	批准	王总
	标记	处数
	更改文件号	签字
	日期	

CS-51H3-H**AH1 INDOOR UNIT

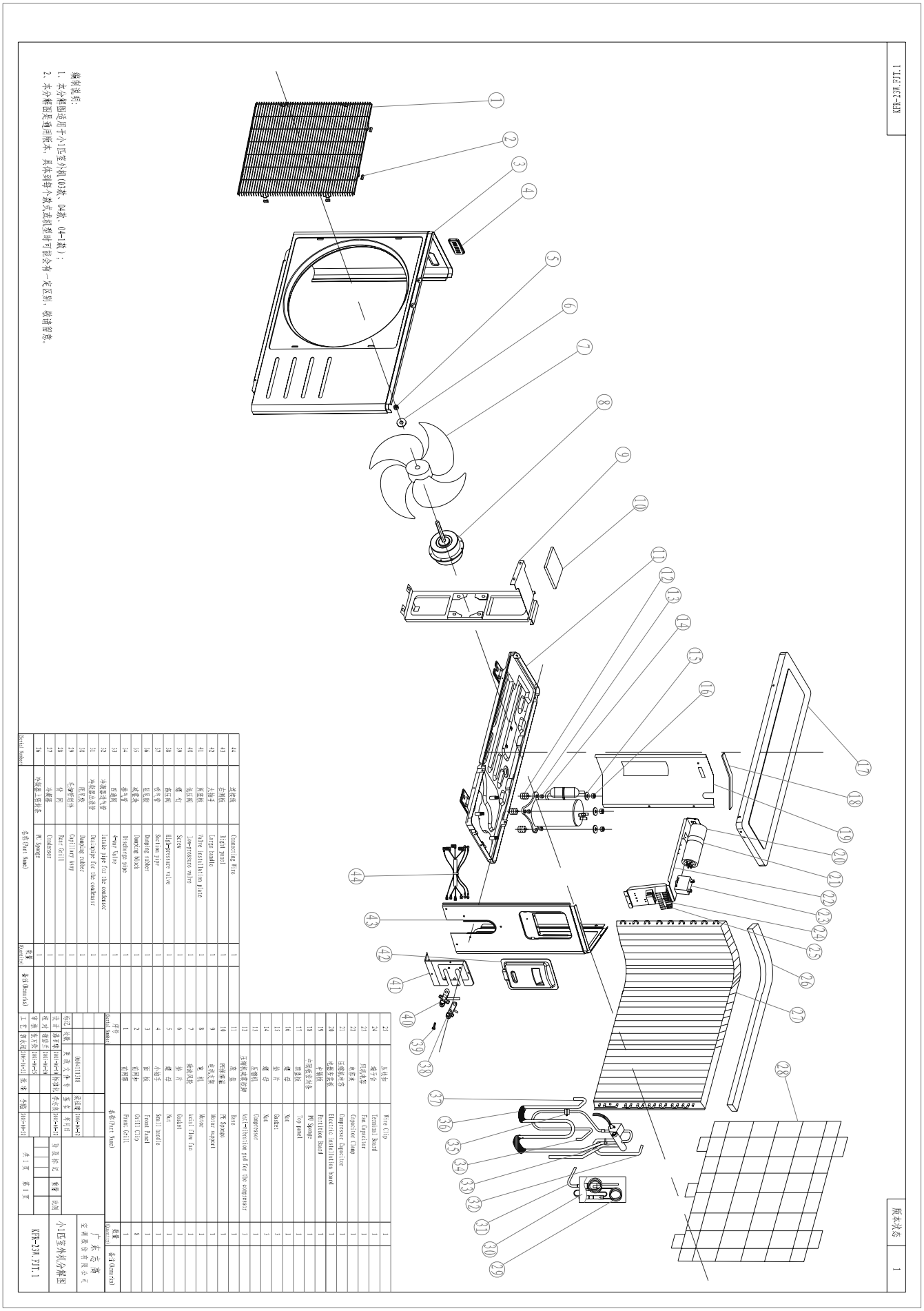


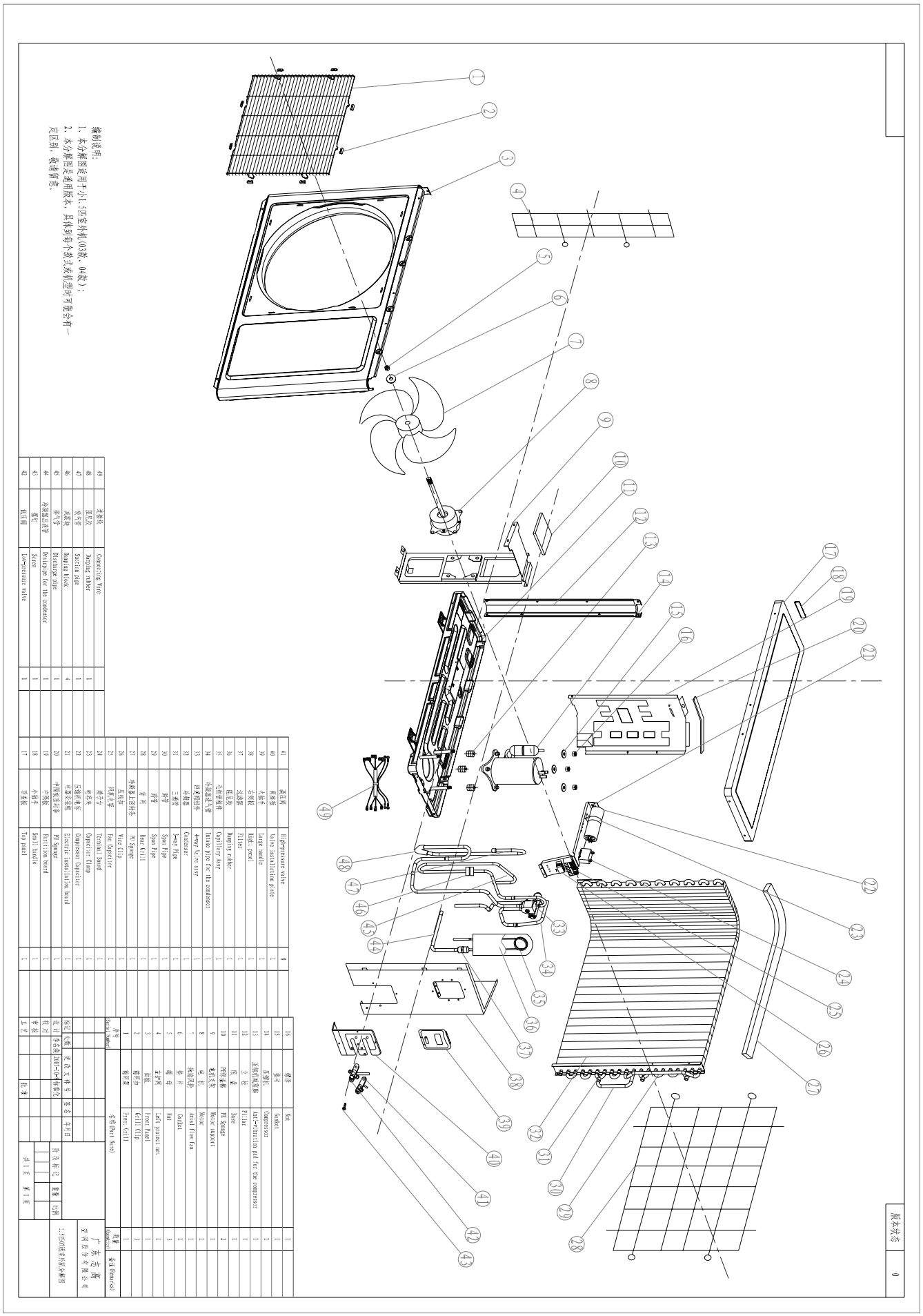
CS-66H3-N**AS INDOOR UNIT





KFR-23GW/AC CS-25H3-V**AY1A OUTDOOR UNIT




编制说明：
1、本分解图适用于小1.5匹室外机(03款、04款)；
2、本分解图是通用版本，具体到每个型式或机型时可能会有一定区别，敬请留意。
版本转态
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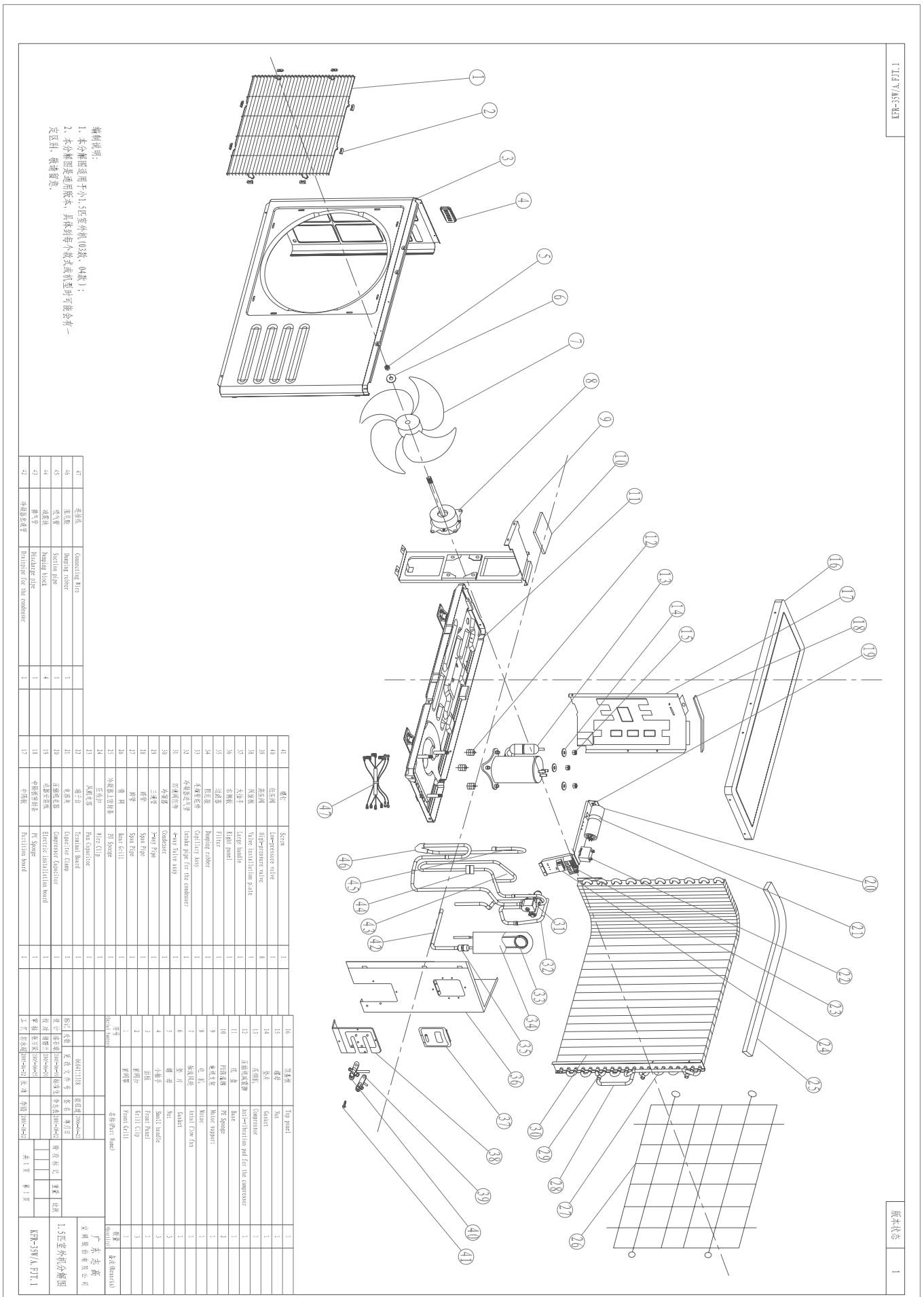
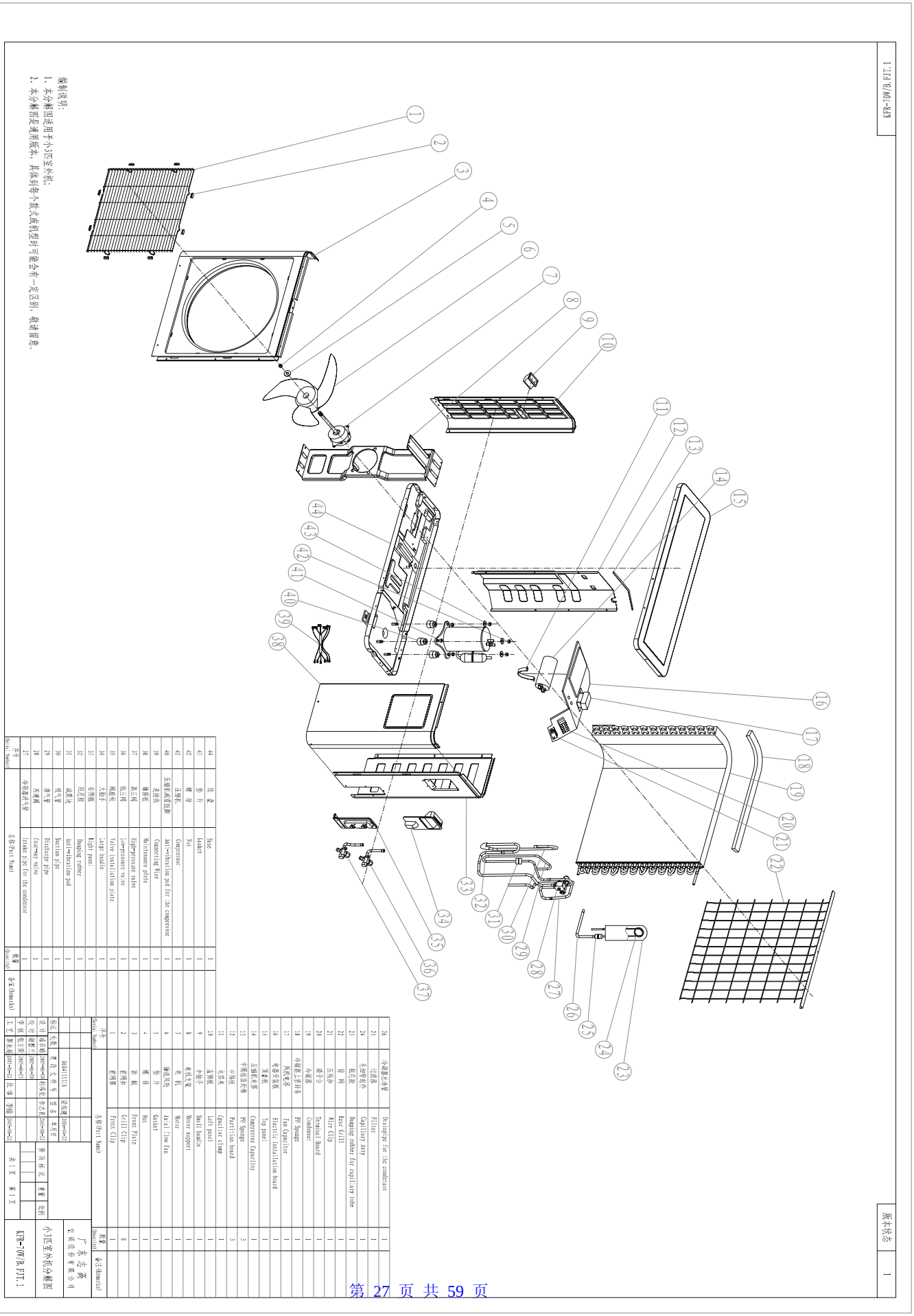
CS-51H3-H**AH1 OUTDOOR UNIT


KFR-35W/A.F1T1.1
版本状态
1
1.5匹室外机分解图
广东志高空调有限公司
KFR-35W/A.F1T1.1
Top panel
Nut
Gasket
Compressor
Anti-vibration pad for the compressor
Base
PE Sponge
Motor support
Motor
Axial flow fan
Gasket
Nut
Small handle
Front Panel
Grill Clip
Front Grill
Screw
Low-pressure valve
High-pressure valve
Valve installation plate
Large handle
Radio model
Filter
Damping rubber
Capillary assy
Intake pipe for the condenser
4-way Valve assy
Condenser
3-way Pipe
Spun Pipe
Spun Pipe
Base Grill
PE Sponge
Wire Clip
Fan Capacitor
Terminal Board
Capacitor Clamp
Compressor Capacitor
Electric installation board
PE Sponge
Partition board
Connecting Wire
Damping rubber
Suction Pipe
Damping block
Discharge pipe for the condenser
Discharge pipe for the condenser
Suction Pipe
Damping rubber
Connecting Wire
Partition board
Electric installation board
Compressor Capacitor
Capacitor Clamp
Terminal Board
Fan Capacitor
Wire Clip
PE Sponge
Base Grill
Spun Pipe
Spun Pipe
3-way Pipe
Condenser
4-way Valve assy
Intake pipe for the condenser
Capillary assy
Damping rubber
Filter
Radio model
Large handle
Valve installation plate
Low-pressure valve
High-pressure valve
Screw
Gasket
Nut
Top panel
Front Grill
Grill Clip
Front Panel
Small handle
Nut
Gasket
Axial Flow fan
Motor
Motor support
PE Sponge
Base
Anti-vibration pad for the compressor
Compressor
Gasket
Nut
Top panel
Part No.
Name
Qty
Remark
Part No.
Name
Qty
Remark
Serial Number
Name
Qty
Remark
Name
Qty
Remark
Name
Qty
Remark

CS-66H3-N**AS OUTDOOR UNIT



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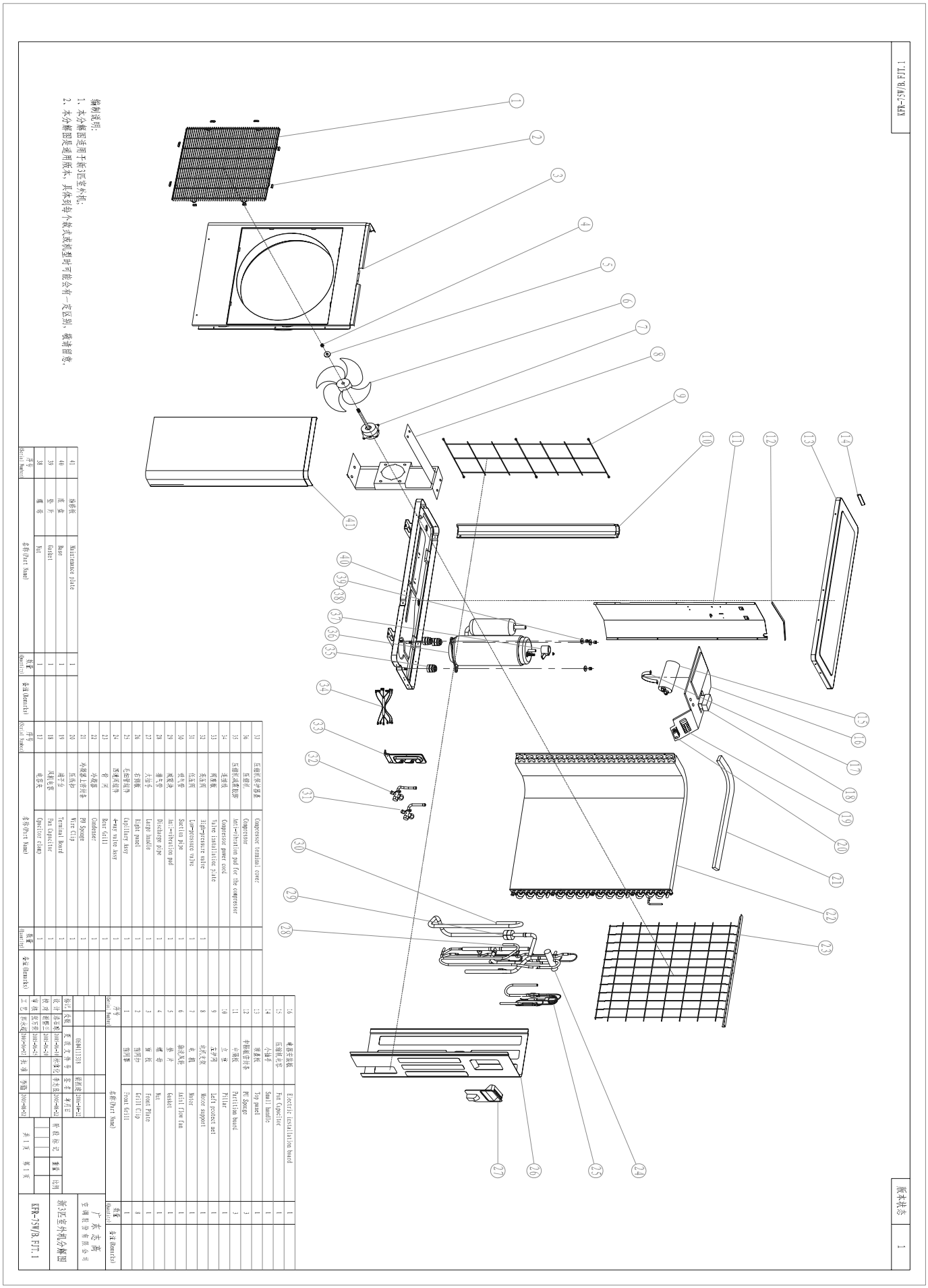


PART LIST (INDOOR UNIT)

序号 (Serial Number)	名称 (Part Name)	CS-23H3-V77AY1A
1	导风条 Louver	391190065
2	轴套 Guide Bearing	100420008
3	导风叶片连杆 Connecting Lever	391200128
4	导风叶片 Swing louver	391200136
5	步进电机 Step motor	320273027
6	摆风摇臂 Rocker	391200129
7	出风主体 Outlet part	391200127
8	压线扣 Wire Clip	391110017
9	底座 Base	391250015
10	导水板 Guide Water Board	391990110
11	贯流风轮 Cross flow fan	100010019
12	轴承座 Bearing	110010605
13	蒸发器 Evaporator assembly	371100071
14	蒸发器左端板 Evaporator left plate	391990239
15	螺钉盖 Screw cover	391260014
16	GV 中框 GV middle frame	391260038
17	附扣 Clip	391260009
18	GV 左过滤网 GV left air Filter	391120070
19	面板 Front Panel assembly	391220192
20	显示灯板 Display lamp panel	——
21	显示盒 Display box	391130022
22	GV 右过滤网 GV right air Filter	391120070
23	中框盖板 Middle frame coverplate	391990273
24	室温探头架 Room temp. Sensor Holder	100280105
25	探头弹簧片 Sensor insert Block	079990240
26	探头铜管 Copper pipe of sensor	079990030
27	右端板 I Right plate I	311050040
28	右端板 II Right plate II	311050039
29	右端板 III Right plate III	029993981
30	电机盖 Motor platen	100130024
31	电机 Motor	030020115
32	底座镶块 Base accessory	391990253
33	电器盒盖 Electric box cover	100100039
34	室温探头 Room Temp. Sensor	973311290
35	管温探头 Tube Temp. Sensor	
36	电控板 Electric control plate	
37	变压器 Transformer	030180061
38	连接线 Connecting Wire	——

39	电器盒 Electric Box	100100010
40	压线扣 Wire Clip	391110017
41	端子台 Terminal Board	030090005
42	电源线 Power Cord	050010026
43	室内外连接电缆 Connecting Cable	342100030
44	压管板 Pipe Clamp	100430027
45	挂墙板 wall-mounting frame	020100009
46	步进电机 Step motor	320273012
47	排水嘴防水环	391990202
48	保温水管 Thermal insulation pipe	099990080
49	遥控器 Remote controller	336815018

序号 (Serial Number)	名称 (Part Name)	CS-25H3-V77AY1A	CS-32H3-V77AH4
1	导风条 Louver	391190065	391190065
2	轴套 Guide Bearing	100420008	100420008
3	导风叶片连杆 Connecting Lever	391200128	391200128
4	导风叶片 Swing louver	391200136	391200136
5	步进电机 Step motor	320273027	320273027
6	摆风摇臂 Rocker	391200129	391200129
7	出风主体 Outlet part	391200127	391200127
8	压线扣 Wire Clip	391110017	391110018
9	底座 Base	391250015	391250015
10	导水板 Guide Water Board	391990169	391990169
11	贯流风轮 Cross flow fan	100010019	100010019
12	轴承座 Bearing	401000009	401000009
13	蒸发器 Evaporator assembly	371100071	371100085
14	蒸发器左端板 Evaporator left plate	391990239	109990089
15	螺钉盖 Screw cover	391260014	391260014
16	GV 中框 GV middle frame	391260038	391260038
17	附扣 Clip	391260009	391260009
18	GV 左过滤网 GV left air Filter	391120070	391120070
19	面板 Front Panel assembly	391220192	391220192
20	显示灯板 Display lamp panel	——	——
21	显示盒 Display box	391130022	391130022
22	GV 右过滤网 GV right air Filter	391120070	391120070
23	中框盖板 Middle frame coverplate	391990273	391990238
24	室温探头架 Room temp. Sensor Holder	100280105	100280105
25	探头弹簧片 Sensor insert Block	079990240	079990240
26	探头铜管 Copper pipe of sensor	079990030	079990030
27	右端板 I Right plate I	311050040	311050040

28	右端板 II Right plate II	311050039	311050039
29	右端板 III Right plate III	029993981	029993981
30	电机盖 Motor platen	100130024	100130024
31	电机 Motor	030020115	030020115
32	底座镶块 Base accessory	391990253	391990253
33	电器盒盖 Electric box cover	100100039	100100039
34	室温探头 Room Temp. Sensor	338000155	338000155
35	管温探头 Tube Temp. Sensor	338000076	338000076
36	电控板 Electric control plate	331300361	331300309
37	变压器 Transformer	030180061	030180061
38	连接线 Connecting Wire	——	——
39	电器盒 Electric Box	100100010	100100010
40	压线扣 Wire Clip	391110017	391110018
41	端子台 Terminal Board	030090005	030090005
42	电源线 Power Cord	050010026	050010027
43	室内外连接电缆 Connecting Cable	342100030	342100030
44	压管板 Pipe Clamp	100430027	100430027
45	挂墙板 wall-mounting frame	020100009	020100009
46	步进电机 Step motor	320273012	320273012
47	排水嘴防水环	391990202	391990202
48	保温水管 Thermal insulation pipe	099990080	099990080
49	遥控器 Remote controller	336815018	336815018

序号 (Serial Number)	名称 (Part Name)	KFR-51GW/Bc
1	下导风条 Down louver	100420087
2	上导风条 Up Louver	100420088
3	导风叶片 Swing louver	100420007
4	导风叶片连杆 Swing louver connecting lever	100420048
5	导风条轴套 Guide Louver Bearing	100420008
6	出风主体 Outlet part	391200003
7	底座左角板 Left angle plate	100360002
8	底　座 Base	391060003
9	贯流风轮 Cross flow fan	391050015
10	贯流风轮轴承 Ring of cross flow fan bearing	110010655
11	贯流风轮轴承胶圈 Ring of cross flow fan bearing	
12	蒸发器组件 Evaporator assembly	371100032
13	蒸发器左固定板 Evaporator left fixed plate	029993988
14	电加热器 Electric heater	——
15	螺钉盖 Screw cover	109995908
16	中　框 Middle frame	391070003
17	中框前扣 Front Clip	100080032

18	过滤网 Air Filter	100190139
19	冷触媒 Cold Catalyst	——
20	显示盒盖 Display box cover	391140019
22	显示盒 Display box	391130022
21	面　板 Front Panel	391022252
23	中框盖板 Middle frame coverplate	391990286
24	室温探头架 Room temp. Sensor Holder	100280105
25	弹簧片 Insert Block	079990240
26	探头铜管 Copper pipe of sensor	079990030
27	压管板 Pipe Clamp	029991901
28	蒸发器右固定板 Evaporator right fixed plate	109990109
29	电机压板 Motor platen	100130003
30	电　机 Motor platen	030020173
31	电器盒盖 Electric box cover	100100041
32	显示板 Display lamp panel	331800149
33	管温探头 Tube Temp. Sensor	973300954
34	室温探头 Room Temp. Sensor	
35	电控板 Electric control plate	
36	连接线 Connecting Wire	——
37	变压器 Transformer	030180061
38	电器盒 Electric Box	100100035
39	压线扣 Wire Clip	391110018
40	室内外连接电缆线 Connecting Cable	342200038
41	端子台 Terminal Board	030090005
42	电源线 Power Cord	050010027
43	底座右角板 Right angle plate	100300026
44	挂墙板 wall-mounting frame	020100011
45	螺钉 Screw	150010071
46	步进电机 Step motor	320273001
47	电机固定板 Motor fixed plate	100420002
48	曲柄连杆 Crank connecting rod	100420082
49	上曲柄 Upper crank	
50	下曲柄 Lower crank	
51	保温水管 Thermal insulation pipe	099990080
52	遥控器 Remote controller	336815011

序号 (Serial Number)	名称 (Part Name)	CS-66H3-N77AS
1	导风叶片 Swing Louver	100420012 100420041
2	连　杆 Connecting rod	100420061
3	导风条轴套 A Guide Louver Bearing A	109990468
4	导风条轴套 B Guide Louver Bearing B	109990472

5	出风主体 Outlet part	391200047
6	导风条 Louver	100390005
7	底　座 Base	391060015
8	风轮左端固定板 Fan Left fixed plate	109990310
9	贯流风轮 Cross flow fan	100010003
10	贯流风轮轴承 Fan Bearing	110010202
11	贯流风轮轴承胶圈 Ring of Bearing	
12	蒸发器组件 Evaporator assembly	080020004
13	电加热器 Electric heater	——
14	螺钉盖 Screw cover	109990079
15	中　框 Middle frame	391070030
16	冷触媒 Cold Catalyst	——
17	过滤网 Air Filter	100190118
18	显示盒盖 Display box cover	391140016
19	显示盒 Display box	391130019
20	面　板 Front Panel	391220130
21	室温探头架 Room temp. Sensor Holder	100280105
22	弹簧片 Insert Block	079990240
23	探头铜管 Copper pipe of sensor	079990030
24	挡水板 Water-resistant board	——
25	电机压板 Motor platen	100130026
26	电机右固定板 Motor fixed-board	100130004
27	电　机 Motor	320202015
28	安全盖 Safety cover	020160029
29	电器盒盖 Electric box cover	020160016
30	压线板 Wire Clamp	100430022
31	连接线 Connecting Wire	——
32	电器盒内件 1 Electric box Panel 1	100430014
33	电器盒 Electrical box	020150034
34	电器盒内件 2 Electric box Panel 2	100430015
35	电器盒内件 3 Electric box Panel 3	100430016
36	显示板 Display lamp panel	331800144
37	管温探头 Tube Temp. Sensor	331300322
38	电控板 Electric control plate	
39	室温探头 Room Temp. Sensor	
40	电源线 Power Cord	341220004
41	端子台 Terminal Board	030090007
42	室内外连接电缆线 Connecting Cable	342300006
43	螺钉 Screw	150010018
44	步进电机 Step motor	320273006
45	保温水管 Thermal insulation pipe	099990080
46	压管板 Pipe Clamp	100430026
47	挂墙板 Wall-mounting frame	020100003
48	遥控器 Remote controller	336815011

序号 (Serial Number)	名称 (Part Name)	CS-88H3-Q77AT
1	挂墙板 Wall-mounting frame	311010010
2	底　座 Base	391060109
3	贯流风轮 Cross flow fan	100010018
4	贯流风轮轴承 Fan Bearing	——
5	贯流风轮轴承胶圈 Ring of Bearing	——
6	室温探头架 Room temp. Sensor Holder	100280105
7	蒸发器组件 Evaporator Assy	080020092
8	蒸发器左端板 Evaporator left plate	391990164R
9	电加热器 Electric heater	——
10	出风主体 Outlet part	391800030
11	上导风条 Up Louver	391190050
12	下导风条 Down louver	391190051
13	左大连杆 A　Left Connecting rod A	391200088
14	轴套 D　Guide Louver Bearing D	391200096
15	步进电进左支架 Step motor left support	391200081
16	导风叶片(小)Swing louver	391200095
17	导风叶片右支架 Swing louver right support	391200094
18	导风叶片中支架 Swing louver middle support	391200093
19	导风叶片左支架 Swing louver left support	391200092
20	风口护网 Air outlet protect net	——
21	中框 Middle frame	391220062
22	螺钉盖 Screw cover	391990157
23	冷触媒 Cold Catalyst	119990011
24	左过滤网 Left Air filter	391120045
25	右过滤网 Right Air filter	391120046
26	面板 Front Panel	391220140
27	底座右镶块 Right angle plate	391990159
28	电机固定座 Motor holder	391990160
29	电机 Motor	320202014
30	电机护盖 Motor cover	391990161
31	电器盒 Electrical box	020150086
32	过线扣 Hook for the wire	391110013
33	压线板 Wire Clamp	391110013
34	电器盒内件 1 Electric box Panel 1	100430080
35	电器盒内件 2 Electric box Panel 2	100430081
36	指示灯架 display lamp frame	391110014
37	室温探头 Room Temp. Sensor	331300306
38	管温探头 Tube Temp. Sensor	

39	电控板 Electric control plate	
40	电源线 Power cord	050010076
41	端子台 Terminal Board	030090035
42	室外连接电缆线 Connecting cable	050020082 342300078
43	保温水管 Thermal insulation pipe	099990080
44	导风条轴套	391200085
45	左中连杆 Left middle Connecting rod	391200086
46	左大连杆 B Left Connecting rod B	391200090
47	右中连杆 Right middle Connecting rod	391200087
48	右大连杆 B Right Connecting rod B	391200091
49	右大连杆 A Right Connecting rod A	391200089
50	轴套连杆	391200084
51	步进电机右支架 Step motor right support	391200098
52	外风门步进电机 Step motor	320273013
53	轴套 A　Guide Louver Bearing A	391200082
54	轴套 B Bearing B	391200083
55	压线扣 Wire Clip	391110015
56	挡水板 Water-resistant board	391990162
57	电器盒盖 Electric box cover	311020006
58	轴套 C bearing C	391200097
59	立体风左步进电机	320273015
60	立体风右步进电机	320273014
61	显示盒 Display box	391130019
62	显示灯板 Display lamp panel	——
63	遥控器 Remote controller	336815011

PART LIST (OUTDOOR UNIT)

序号 (Serial Number)	名称 (Part Name)	CS-23H3-V77AY1A	CS-25H3-V77AY1A
1	前网罩 Front Grill	020120002	020120002R
2	前网扣 Grill Clip	109990256	109990256R
3	面　板 Front Panel	020070001	020070001R
4	小抽手 Small handle	100050001	100050001R
5	螺　母 Nut	150020019	150020019
6	垫　片 Gasket	150030016	150030016
7	轴流风轮 Axial flow fan	100030013	100030013
8	电　机 Motor	030020201	030020201
9	电机支架 Motor support	313040004	020040029

10	PE 保棉温 PE Sponge	382100010	——
11	底　盘 Base	313221043	313221043
12	压缩机减震胶脚 Anti-vibration pad for the compressor	305146005	010011455
13	压缩机 Compressor	960114043	301114032
14	螺　母 Nut	150020003	150020003
15	垫　片 Gasket	150030010	150030010
16	螺　母 Nut	150020003	150020003
17	顶盖板 Top panel	029994516	029994516
18	中隔板密封条 PU Sponge	090020226	090020226
19	中隔板 Partition Board	020030001	020030001
20	电器安装板 Electric installation board	313120027	313120027
21	压缩机电容 Compressor Capacitor	030010016	030010016
22	电容夹 Capacitor Clamp	020140006	020140006
23	风机电容 Fan Capacitor	030010005	030010005
24	端子台 Terminal Board	030090025	030090025
25	压线扣 Wire Clip	321100011	321100011
26	冷凝器上密封条 PU Sponge	——	——
27	冷凝器 Condenser	372100045	372100045
28	背　网 Rear Grill	020110001	020110001
29	毛细管组件 Capillary Assy	960800234	971900443
30	阻尼胶 Damping rubber	110030017	110030017
31	冷凝器出液管 Drainpipe for the condensor	070040097	070040097
32	冷凝器进气管 Intake pipe for the condensor	360440120	360440065R
33	四通阀 4-way Valve	030130006	030130006
34	排气管 Discharge pipe	360220139	360220139
35	减震块 Damping block	110020005	110020005
36	阻尼胶 Damping rubber	110030020	110030020
37	吸气管 Suction pipe	360120139	360120139
38	高压阀 High-pressure valve	060020092	060020092
39	螺　钉 Screw	150010048	150010048
40	低压阀 Low-pressure valve	060020095	060020095
41	阀座板 Valve installation plate	020020001	020020001
42	大抽手 Large handle	100040001	100040001
43	右侧板 Right panel	020060004	020060004
44	连接线 Connecting Wire	050030002	050030002

序号 (Serial Number)	名称 (Part Name)	CS-32H3-V77AH4
1	网罩 Front Grill	020120015R
2	网罩卡 Grill Clip	393990022R
3	面板 Front Panel	313070029R
4	左护网 Left protect net	313990044R
5	螺母 Nut	150020003R
6	垫片 Gasket	150030021R

7	轴流风叶 Axial flow fan	393010001
8	电机 Motor	320222005
9	电机支架 Motor support	313040002
10	PE 保温棉（电机支架顶部垫棉）PE Sponge	382100010R
11	底盘 Base	313221034
12	立柱 Pillar	313990027R
13	压缩机减震胶脚 Anti-vibration pad for the compressor	305146004
14	压缩机 Compressor	301114013
15	垫片 Gasket	150030010R
16	螺母 Nut	150020003
17	顶盖板 Top panel	020080002R
18	小抽手 Small handle	100050018R
19	中隔板 Partition board	20030004
20	中隔板密封条 PU Sponge	090020027R
21	电器板 Electric installation board	313120028
22	压缩机电容 Compressor Capacitor	030010017
23	电容夹 Capacitor Clamp	020140006
24	端子台 Terminal Board	030090025
25	风机电容 Fan Capacitor	030010005
26	压线扣 Wire Clip	321100011
27	冷凝器上密封条 PU Sponge	——
28	背网 Rear Grill	020110002R
29	跨管 Span Pipe	——
30	跨管 Span Pipe	——
31	三通管 3-way Pipe	070130023
32	冷凝器 Condenser	372100004R
33	四通阀组件 4-way Valve assy	372100002
34	冷凝器进气管 Intake pipe for the condenser	360440142
35	毛细管组件 Capillary Assy	971900441
36	毛细管阻尼胶 Damping rubber	110030017
37	过滤器 Filter	070190038
38	右侧板 Right panel	313060030
39	大抽手 Large handle	100040001R
40	阀座板 Valve installation plate	020020002R
41	高压阀 High-pressure valve	060020092
42	低压阀 Low-pressure valve	060020107
43	螺钉 Screw	150010048
44	冷凝器出液管 Drainpipe for the condensor	070040002
45	排气管 Discharge pipe	360220190
46	减震块 Damping block	110020005
47	吸气管 Suction pipe	360120174
48	阻尼胶 Damping rubber	110030023R
49	连接线 Connecting Wire	050030002

序号 (Serial Number)	名称 (Part Name)	KFR-51GW/Bc
1	前网罩 Front Grill	020120015
2	前网扣 Grill Clip	109990256
3	面板 Front Panel	020070056
4	小抽手 Small handle	100050021
5	螺　母 Nut	150020009
6	垫　片 Gasket	453000010
7	轴流风轮 Axial flow fan	393010015
8	电　机 Motor	320222014
9	电机支架 Motor support	020040039
10	PE 保温棉 PE Sponge	——
11	底　盘 Base	313221017
12	压缩机减震脚 Anti-vibration pad for the compressor	010010980
13	压缩机 Compressor	301109007
14	垫片 Gasket	150030013
15	螺母 Nut	150020003
16	顶盖板 Top panel	020080002
17	中隔板 Partition board	020030004
18	中隔板密封条 PU Sponge	090020027
19	电器安装板 Electric installation board	020130006
20	压缩机电容 Compressor Capacitor	030010020
21	电容夹 Capacitor Clamp	020140010
22	端子台 Terminal Board	030090025
23	风机电容 Fan Capacitor	030010007
24	压线扣 Wire Clip	321100003
25	冷凝器上密封条 PU Sponge	——
26	背　网 Rear Grill	020110002
27	跨管 Span Pipe	——
28	跨管 Span Pipe	——
29	三通管 3-way Pipe	070130108
30	冷凝器 Condenser	372100070
31	四通阀组件 4-way Valve assy	030130007
32	冷凝器进气管 Intake pipe for the condenser	960600016
33	毛细管组件 Capillary Assy	960800182
34	阻尼胶 Damping rubber	110030017
35	过滤器 Filter	070190034
36	右侧板 Right panel	020060009
37	大抽手 Large handle	100040002
38	阀座板 Valve installation plate	020020002

39	高压阀 High-pressure valve	060020092
40	低压阀 Low-pressure valve	060020088
41	螺钉 Screw	150010048
42	冷凝器出液管 Drainpipe for the condensor	——
43	排气管 Discharge pipe	360230092
44	减震块 Damping block	110020011
45	吸气管 Suction pipe	360130126
46	阻尼胶 Damping rubber	110030023
47	连接线 Connecting Wire	345100010

序号 (Serial Number)	名称 (Part Name)	CS-66H3-N77AS
1	前网罩 Front Clip	020120001
2	前网扣 Grill Clip	109990256
3	面　板 Front Plate	020070004
4	螺　母 Nut	150020031
5	垫　片 Gasket	150030217
6	轴流风叶 Axial flow fan	100030008
7	电　机 Motor	320222018
8	电机支架 Motor support	313040007
9	小抽手 Small handle	100050003
10	左侧板 Left panel	020050003
11	电容夹 Cpacitor clamp	020140010
12	中隔板 Partition board	020030007
13	中隔板密封棉 PU Sponge	090010033
14	压缩机电容 Compressor Capacitor	030010020
15	顶盖板 Top panel	020080035
16	电器安装板 Electric installation board	020130003
17	风机电容 Fan Capacitor	030010010
18	冷凝器上密封条 PU Sponge	——
19	冷凝器 Condenser	0800102C1
20	端子台 Terminal Board	030090137
21	压线扣 Wire Clip	321100004
22	背网 Rear Grill	020110003
23	阻尼胶 Damping rubber for capillary tube	110030017
24	毛细管组件 Capillary Assy	971900309
25	过滤器 Filter	070190021
26	冷凝器出液管 Drainpipe for the condensor	——
27	冷凝器进气管 Intake pipe for the condensor	972200785
28	四通阀 four-way valve	355100019
29	排气管 Discharge pipe	070010018
30	吸气管 Suction pipe	070020030

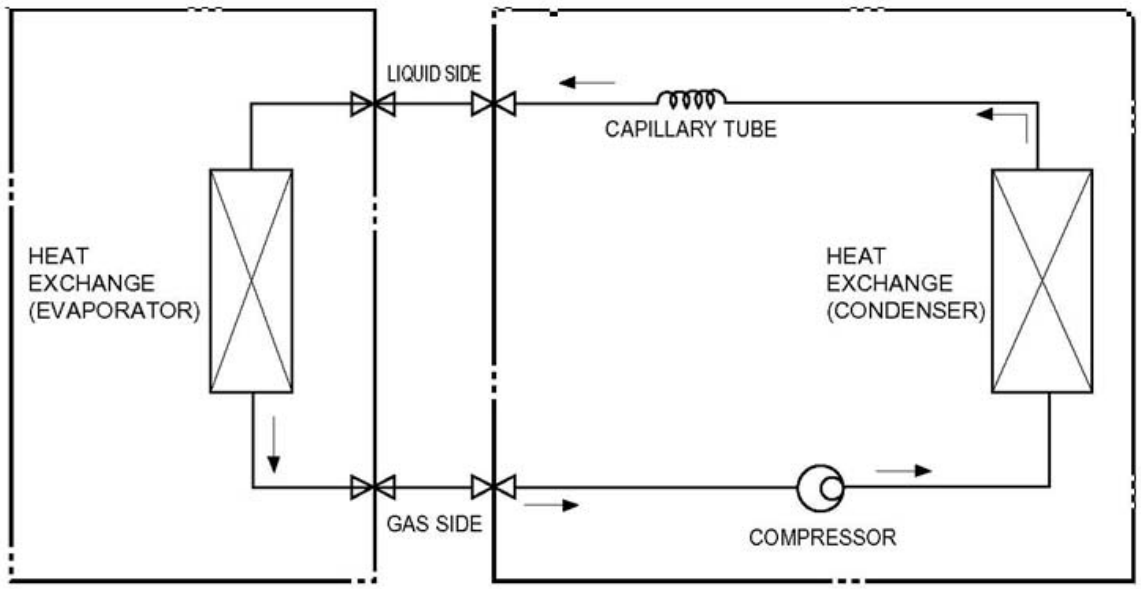
31	减震块 Anti-vibration pad	110020008
32	阻尼胶 Damping rubber	110030023
33	右侧板 Right panel	020060011
34	大抽手 Large handle	100040004
35	阀座板 Valve installation plate	020020007
36	低压阀 Low-pressure valve	060020108
37	高压阀 High-pressure valve	060020102
38	维修板 Maintenance plate	020090001
39	连接线 Connecting Wire	050040058
40	压缩机减震胶脚 Anti-vibration pad for the compressor	305146007
41	压缩机 Compressor	301114021
42	螺　母 Nut	150020031
43	垫　片 Gasket	150030017
44	底　盘 Base	313222010

序号 (Serial Number)	名称 (Part Name)	CS-88H3-Q77AT
1	前网罩 Front Grill	020120001
2	前网扣 Grill Clip	109990256
3	面　板 Front Plate	020070036
4	螺　母 Nut	150020003
5	垫　片 Gasket	150030011
6	轴流风轮 Axial flow fan	100030008
7	电　机 Motor	320222018
8	电机支架 Motor support	020040013
9	左护网 Left protect net	313990018
10	立　柱 Pillar	029995101
11	中隔板 Partition board	020030017
12	中隔板密封条 PU Sponge	090020310
13	顶盖板 Top panel	020080032
14	小抽手 Small handle	100050018
15	压缩机电容 Fan Capacitor	030010022
16	电器安装板 Electric installation board	313120003
17	电容夹 Cpacitor clamp	020140035
18	风机电容 Fan Capacitor	030010010
19	端子台 Terminal Board	030090038
20	压线扣 Wire Clip	321100006
21	冷凝器上密封条 PU Sponge	090020311
22	冷凝器 Condenser	372100012
23	背　网 Rear Grill	313100003
24	四通阀组件 4-way valve Assy	030130007
25	毛细管组件 Capillary Assy	960800349

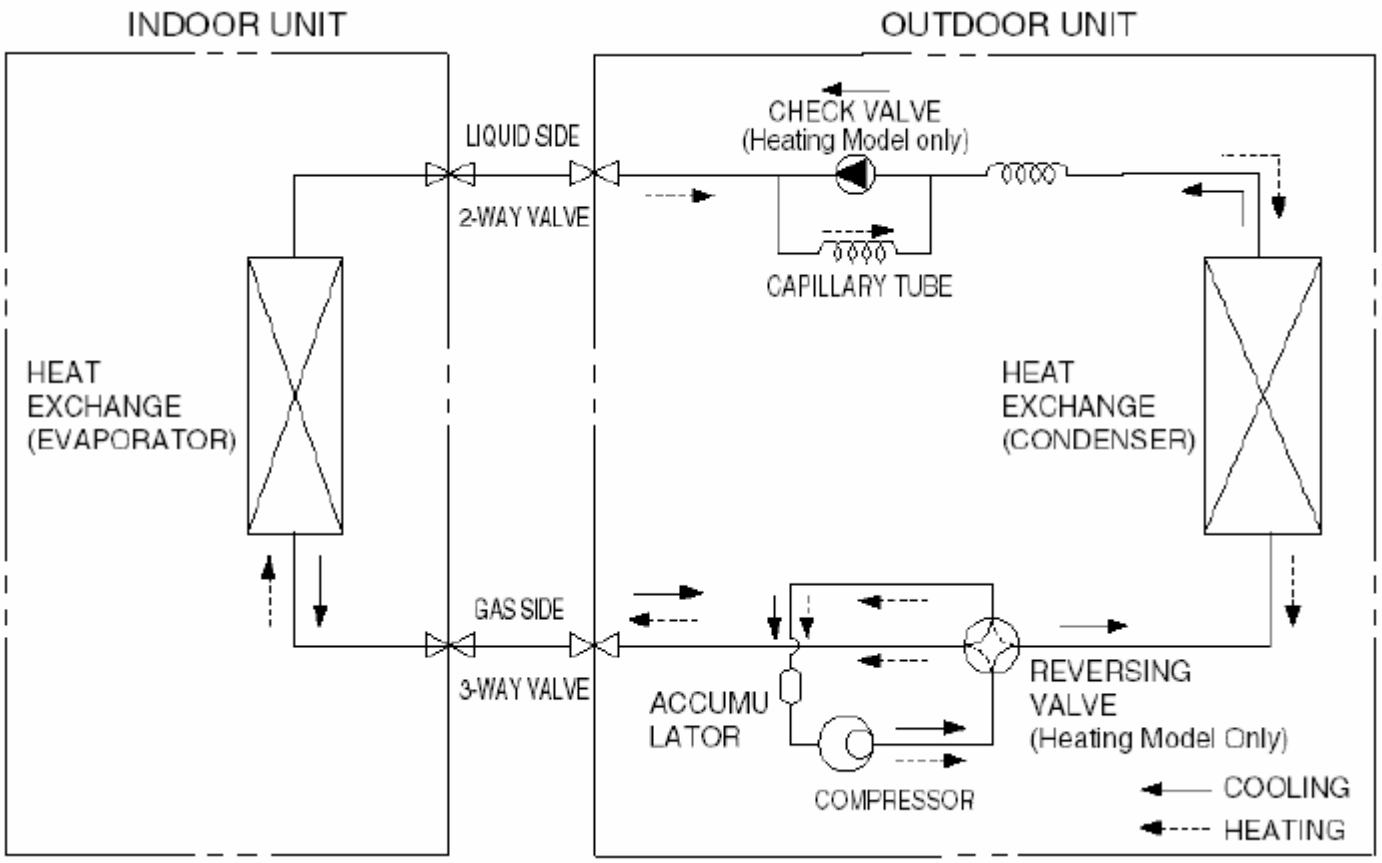
26	右侧板 Right panel	020060025
27	大抽手 Large handle	100040004
28	排气管 Discharge pipe	960200018
29	减震块 Anti-vibration pad	100310004
30	吸气管 Suction pipe	360160053
31	低压阀 Low-pressure valve	060020145
32	高压阀 High-pressure valve	060020102
33	阀座板 Valve installation plate	020020007
34	连接线 Compressor power cord	050040022
35	压缩机减震胶脚 Anti-vibration pad for the compressor	306091001
36	压缩机 Compressor	301109012
37	压缩机保护器盖 Compressor terminal cover	306092001
38	螺　母 Nut	150020019
39	垫　片 Gasket	150030010
40	底　盘 Base	020010458
41	维修板 Maintenance plate	020090008

5. Refrigerant cycle diagram

5.1 Cooling only



5.2 Heat pump mode



6. Model Parameter.

Note: Net/Gross weight（the weight will change according to technology, configuration and customer requirements. so the data is only for reference. The actual weight comes from the product nameplate）.

Model			CS-23H3-V77AY1A	CS-25H3-V**AY1A	CS-32H3-V**AH4
Remote control			ZH/JT-03	ZH/JT-03	ZH/JT-03
Panel		NO.	77	77	77
Rated volt and frequency		Ph-V-Hz	220-240/50	220-240/50	220-240/50
Cooling	Cooling capacity (nominal data)	W	2300	2500	3200
	Rated cooling power input	W	840	900	1150
	Rated cooling current input	A	3.7	4	5.1
	EER	w/w	2.74	2.78	2.78
Heating	Heating capacity (nominal data)	W	2400	2700	3400
	Rated heating power input	W	790	820	1200

	Rated heating current input	A	3.4	3.6	5.4
	COP	w/w	3.04	3.29	2.83
Max. input consumption		W	1080	1300	1500
Max. current		A	4.7	6.7	7.6
INDOOR UNIT	Indoor Noise Level dB	dB(A)	30-39	29-38	32-40
	Dimension (L*W*H)	mm	746*245*196	746*245*196	746*245*196
	Packing (L*W*H)	mm	835*330*278	835*330*278	835*330*278
	Net/Gross weight	Kg	9/11	9/11	9/11
OUTDOOR UNIT	Outdoor Noise Level dB	dB(A)	50	50	54
	Dimension (L*W*H)	mm	700*225*500	700*225*500	795*255*540
	Packing (L*W*H)	mm	825*320*550	825*320*550	920*335*595
	Net/Gross weight	Kg	30/32	25/29	32/36
	Refrigerant type/weight	g	R22/640	R22/660	R22/780
	Design pressure (Hi/Low)	MPa	2.7-0.7	2.45-0.7	2.45-0.7

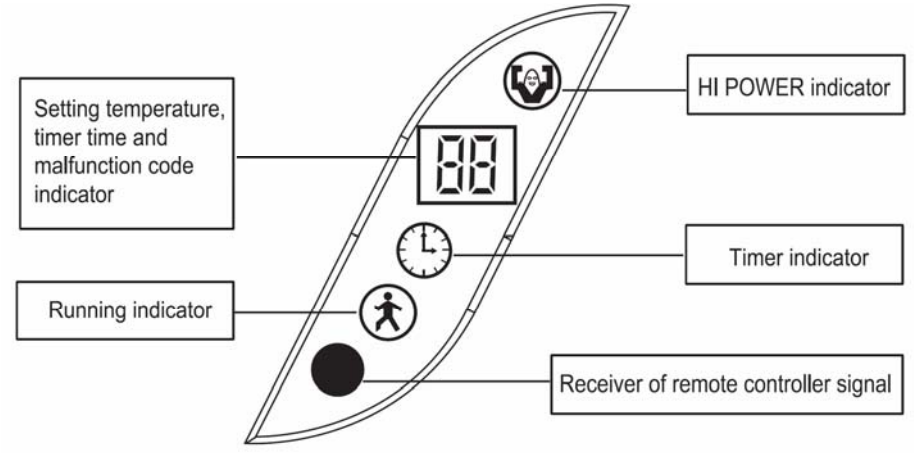
Model			KFR-51GW/Bc	CS-66H3-N**AS	CS-88H3-Q**AT
Remote control			ZH/JT-03	ZH/JT-03	ZH/JT-03
Panel		NO.	77	77	77
Rated volt and frequency		Ph-V-Hz	220-240/50	220-240/50	220-240/50
Cooling	Cooling capacity (nominal data)	W	5100	6600	8800
	Rated cooling power input	W	1895	2300	3000
	Rated cooling current input	A	8.9	10	13.6
	EER	w/w	2.69	2.87	2.93
Heating	Heating capacity (nominal data)	W	5610	7200	9200
	Rated heating power input	W	2030	2400	3190
	Rated heating current input	A	9.5	10.5	13
	COP	w/w	2.76	3	2.88
Max. input consumption		W	2500	3000	3450
Max. current		A	13.4	15	17.5

INDOOR UNIT	Indoor Noise Level dB (High/Low) (actual/label)	dB(A)	36~45	43~47	43~49
	Dimension (L*W*H)	mm	940*270*180	1000*320*200	1225*330*245
	Packing (L*W*H)	mm	1007*340*275	1190*380*300	1445*410*320
	Net/Gross weight	Kg	12/14	15/18	19/23
OUTDOOR UNIT	Outdoor Noise Level dB (High/Low) (actual/label)	dB(A)	54	56	59
	Dimension (L*W*H)	mm	795*255*540	870*310*700	900*330*835
	Packing (L*W*H)	mm	920*335*595	990*410*780	1030*440*960
	Net/Gross weight	Kg	38/42	58/62	65/80
	Refrigerant type/weight	g	R22/1300g	R22/1900	R22/2400
	Design pressure (Hi/Low)	MPa	2.7/0.7	2.7/0.7	2.7/0.7

7. PCB function:

NOTE: Ts is the set temperature, Tr is indoor room temperature, TP1 is indoor coil pipe temperature, TP2 is outdoor coil pipe temperature.

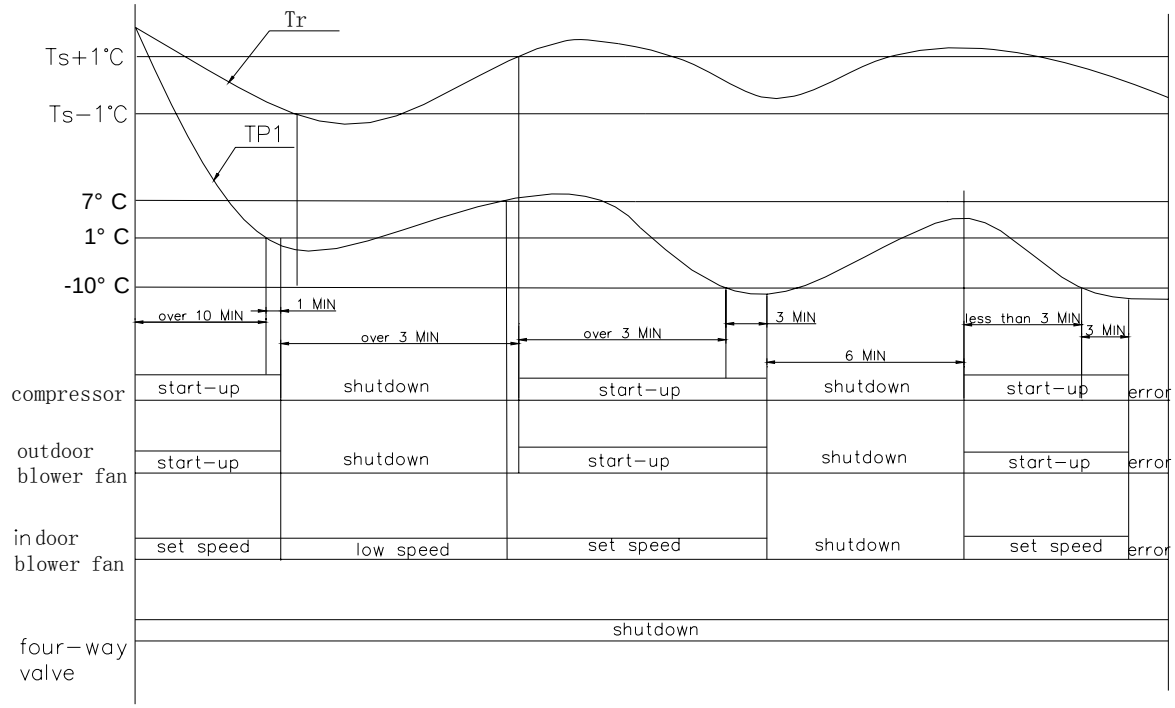
Display panel

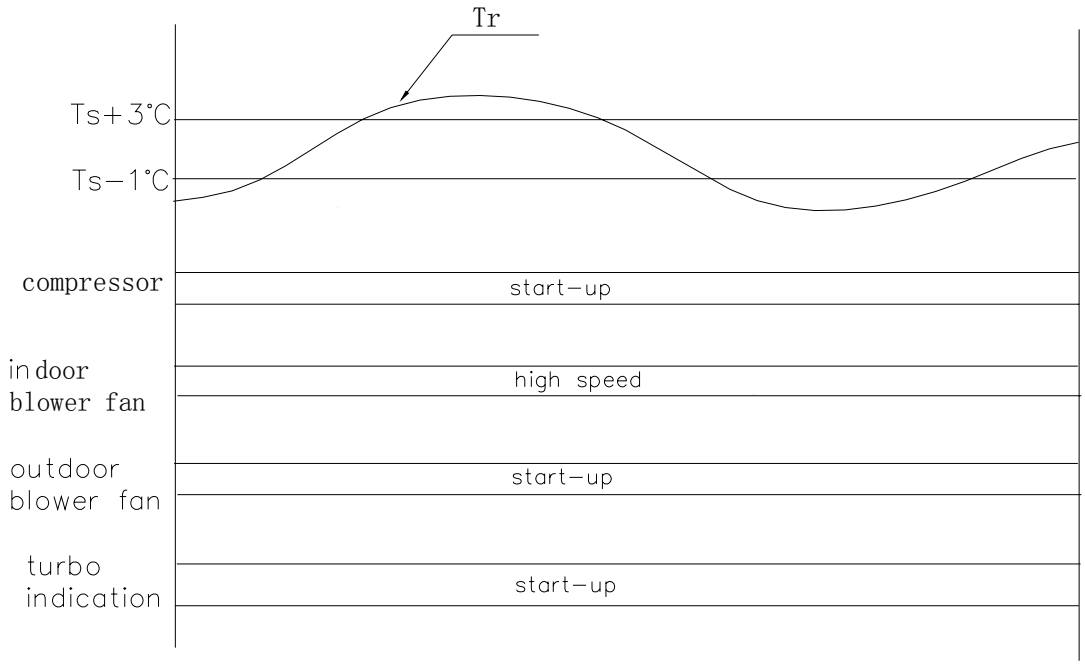

Setting temperature, timer time and malfunction code indicator
HI POWER indicator
Timer indicator
Running indicator
Receiver of remote controller signal

Cooling

- Start up the compressor: when the room temperature is more than Ts+1℃, compressor → start-up
- Shut down the compressor: when the room temperature is less than or equal to the set temperature Ts-1℃, compressor → shutdown
- When the temperature of coil pipe of the indoor units is less than or equal to 1℃ for one minute and the compressor has continuous run for more than ten minutes, the compressor and outdoor blower fan shut down through the electric control board and the indoor blower fan is running at low speed.

- When the temperature of coil pipe of the indoor units is more than or equal to 7℃ and the compressor has shutdown for more than three minutes, the compressor and outdoor blower fan start to run and the indoor blower fan is running at set speed.
- When the temperature of coil pipe of the indoor units is equal to or less than －10℃ for three minutes in the compressor has continuous run for three minutes, the compressor, indoor and outdoor blower fans and swinging wind shut down. Restart up six minutes later; if the above situations appear again within six minutes, all the outputs are shut down through the electric control board and display failure.
- When you press turbo button of remote, the air conditioner enter turbo running, compressor and outdoor blower fan turn on all along, indoor blower fan run at high speed, turbo indication is light.
- After the compressor runs five minutes, the lamp flashes 4 times per six seconds or display E4 if the temperature of indoor coil pips is more than 25℃ in the continuous 20 minutes. The controller will automatically shut down if the temperature of indoor coil pips is more than 25℃ in another continuous 20 minutes, that is the abnormality protection of outdoor units and the indicator lamp keeps its former state of flashing. If the temperature of indoor coil pips is less than 25℃ in the second 20 minutes or the compressor shuts down, the electric control board will store to the normal display and the time is restarted when starting up the compressor next time.





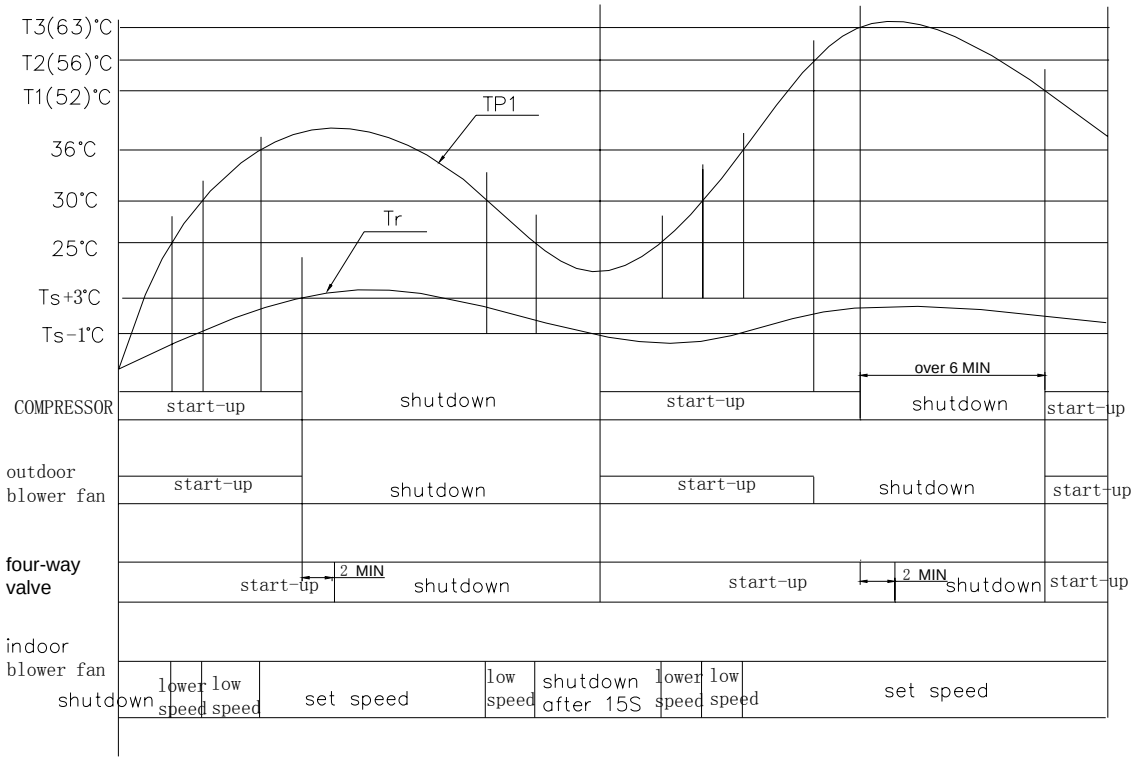
Heating (only applicable to heat pump units)

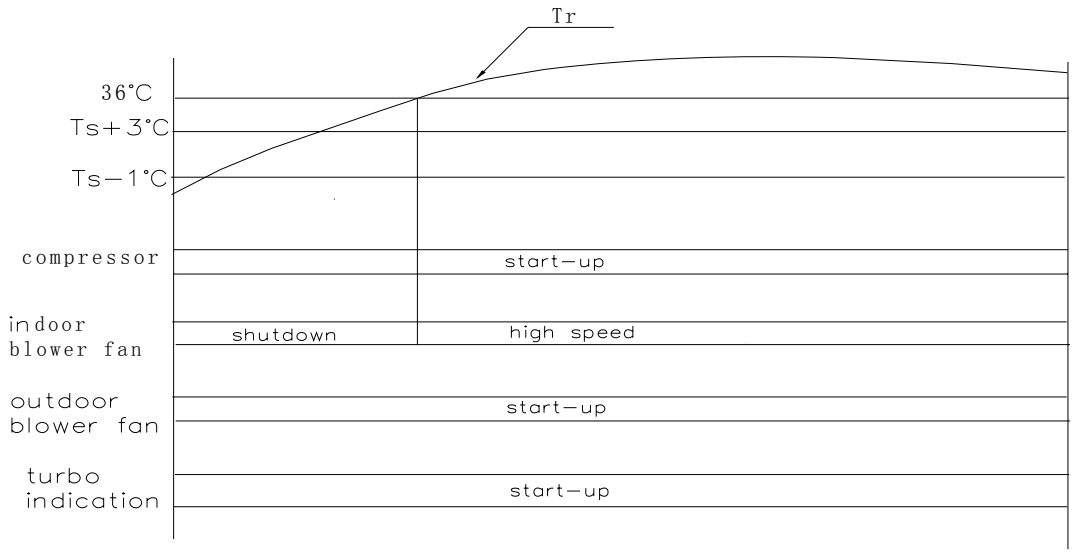
- Start up the compressor: when the room temperature is less than Ts-1℃, compressor → start-up
- Shut down the compressor: when the room temperature is more than or equal to the set temperature Ts+3℃, compressor → shutdown
- The electric heating start-up in the heating mode shall meet the following conditions: ① start up the compressor and indoor blower fan ② none defrost ③ TP1< 49℃ ④Tr ≤20℃.
- The electric heating shutdown in the heating mode shall meet one of the following conditions: ① shutdown indoor blower fan ② Tr ≥ 23℃ ③ TP1≥50℃.
- In the heating mode, the indoor flower fan can be set as high/ medium/ low /automatic running mode by remote control however the anti cool air function is prior. In the heating mode, the anti cool air control function is to control shutdown of the indoor blower fan by detecting the temperature of coil pipe of evaporator so as to attain the purpose of preventing cold air from blowing.
- For the waste heat emission function in the heating mode, in principle, the indoor blower fan shall be on for fifteen seconds after the electric heating is closed.
- When the temperature of coil pipe of indoor units is more than or equal to 56℃, the outdoor blower fan shuts down and it enters the overload protection; when the temperature of coil pipe of indoor units is less than or equal to 52℃, the outdoor blower fan starts up and it exit the overload protection.
- When the temperature of coil pipe of indoor units rises to 63℃, the compressor and outdoor blower fan are

closed and two minutes later, the change valve is closed. The indoor blower fan is running at the set speed. Restart up six minutes later; if the above situations appear again within ten minutes, all the outputs are shut down through the electric control board and display failure.

- When you press turbo button of remote, the air conditioner enter turbo running, compressor ,outdoor blower fan and four-way valve turn on all along, indoor blower fan run at high speed and it must meet start condition, turbo indication is light.

- After the compressor runs five minutes, the lamp flashes 4 times per six seconds or display E4 if the temperature of indoor coil pips is less than 30℃ (heating) in the continuous 20 minutes. The controller will automatically shut down if the temperature of indoor coil pips is less than 30℃ in another continuous 20 minutes, that is the abnormality protection of outdoor units and the indicator lamp keeps its former state of flashing.





Defrost (only applicable to the heating mode)

1. the intelligent defrost

In the heating mode, the electric control board checks and compares the temperature of indoor room and indoor coil pipe after the compressor works for a while; judge whether the outdoor heat exchanger part is frosted or not according to conditions such as the change of indoor coil pipe temperature; if it is judged as frosted, it automatically enters defrosting process. When defrosting, close the indoor and outdoor blower fan and four-way valve.

2. Outdoor PCB for defrost.

In the heating mode, the unit defrost by outdoor control board：

①unit start defrost shall all meet the following conditions：

a、compressor continuous running over 7 minutes；

b、defrost relay shut off；（-5℃）

c、compressor cumulate running time over 50 minutes.；

②first defrost interval time is 50 minutes, later defrost interval time decided by last defrost time.

Defrost time(minute)	Next defrost interval time(minute)
15	30
10--15	40
7--10	60
3--7	70
≤3	80

（2）end defrost condition(meet one of follows)

a、defrost time have fifteen minutes.

b、defrost relay turn on；（＞8℃）

c、press ON/OFF key in defrost process.

3. Outdoor sensor for defrost

unit start defrost shall meet one of the following conditions：

compressor cumulate running time over 30 minutes and it continuous running over 3 minutes, the temperature of coil pipe of the outdoor units is equal to or less than －15℃ for one minutes (Tp2≤-15℃).

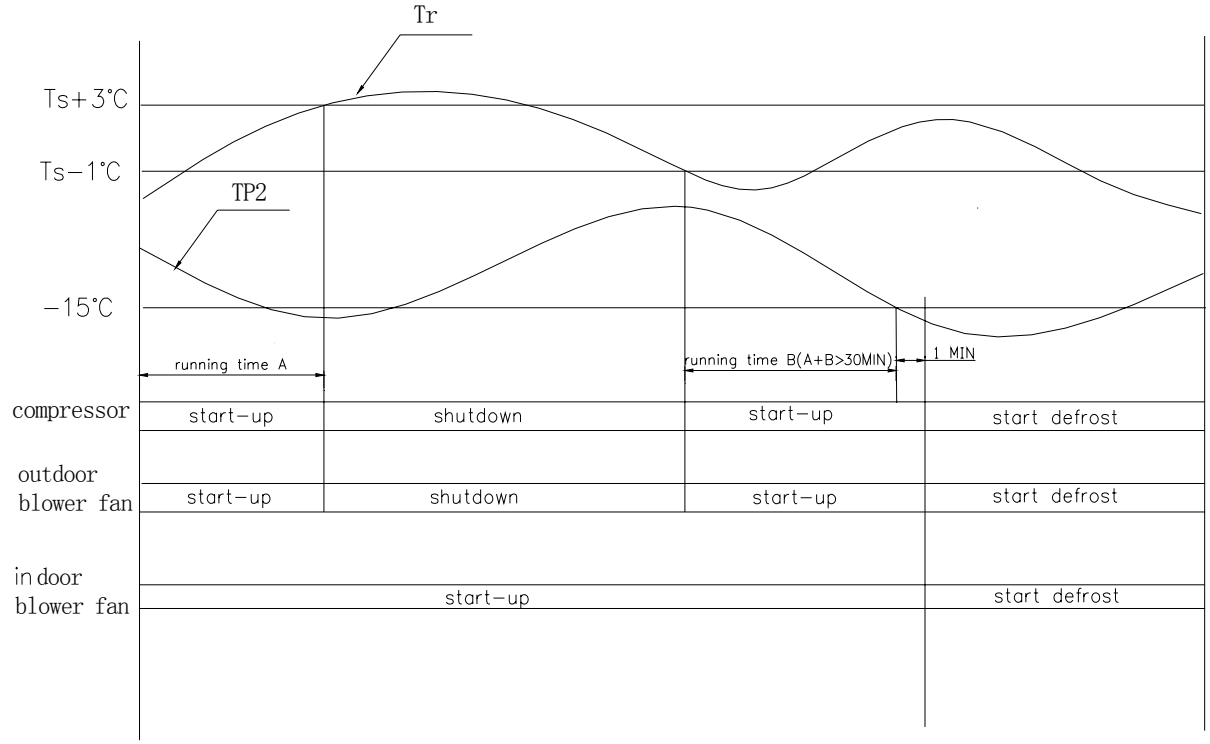
compressor cumulate running time over 40 minutes and it continuous running over 3 minutes, the temperature of coil pipe of the outdoor units is equal to or less than －5℃ for one minutes (Tp2≤-15℃).

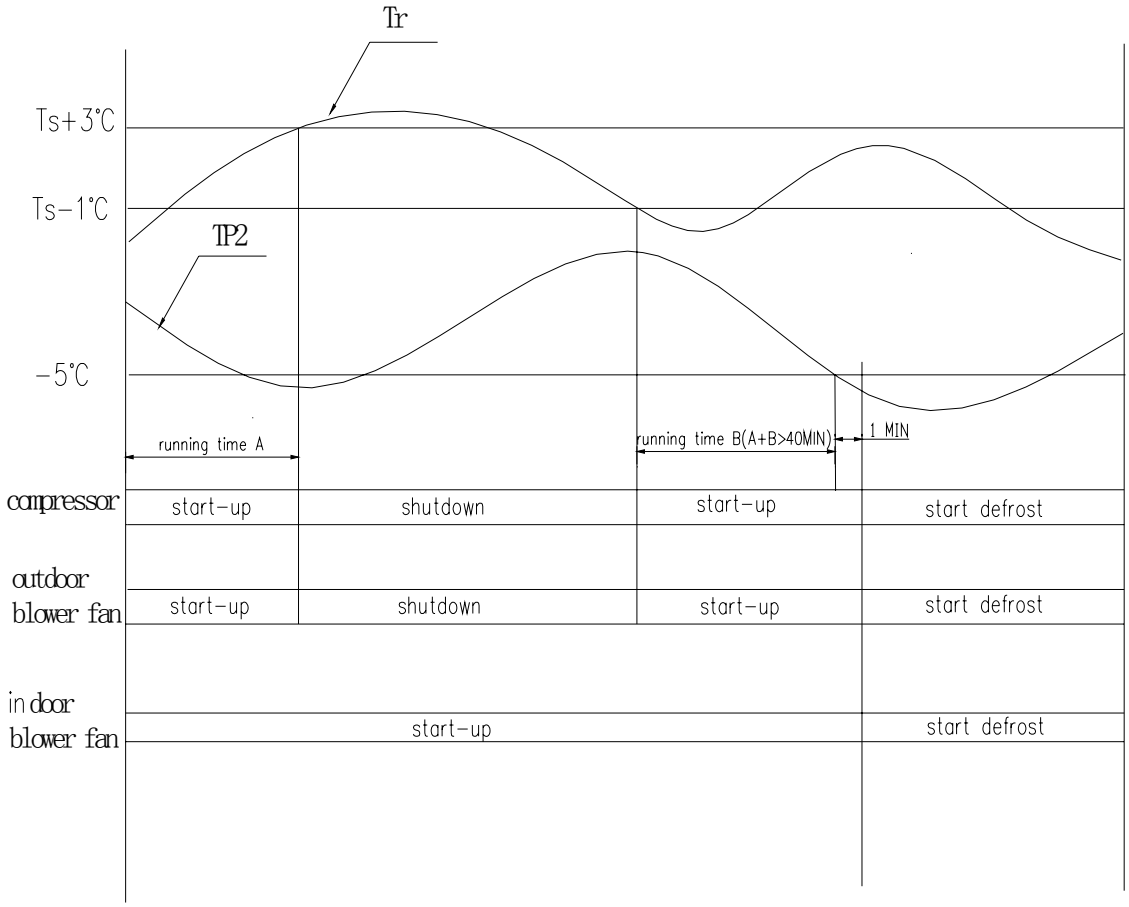
Air conditioner first power on or it wait over 30 minutes ,the temperature of coil pipe of the outdoor units is equal to or less than －2℃ (Tp2≤-15℃)

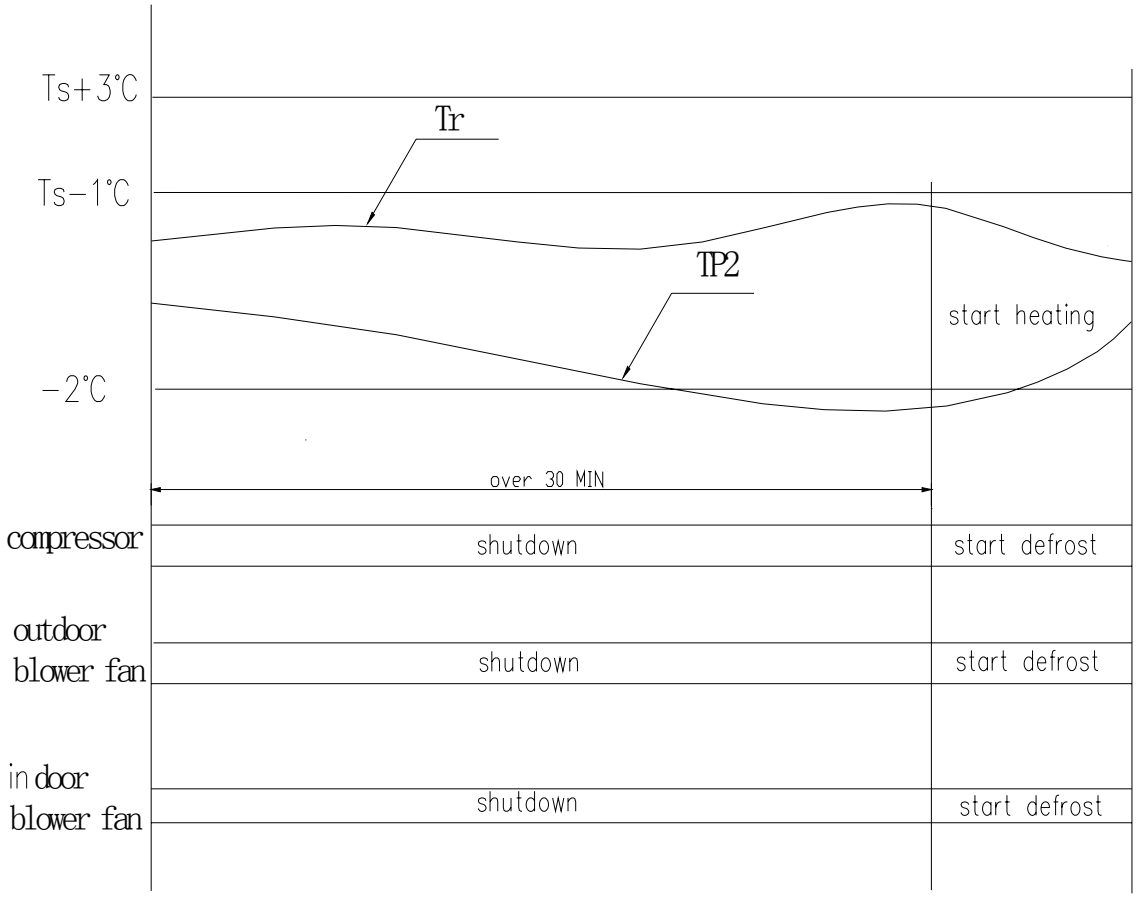
②end defrost condition (meet one of follows)

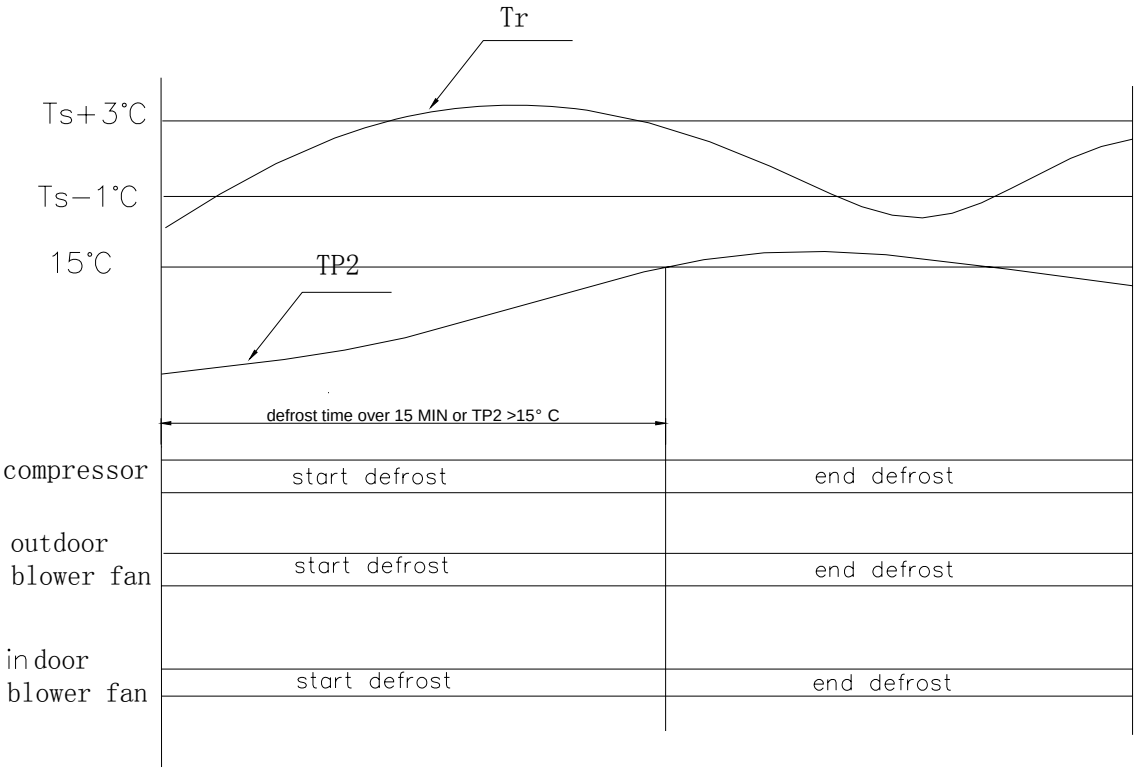
The temperature of coil pipe of the outdoor units is more than 15℃ (Tp2≥-15℃).

Defrost time has fifteen minutes.

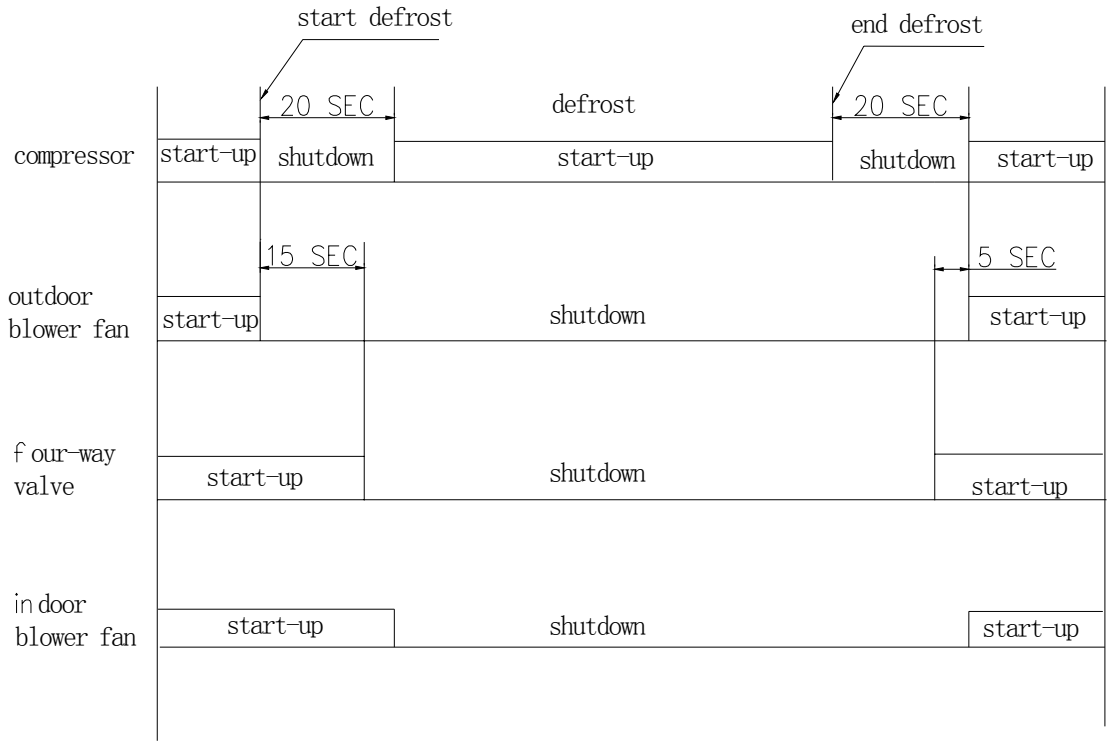

Tr
Ts+3℃
Ts-1℃
TP2
-15℃
running time A
running time B(A+B>30MIN)
1 MIN
compressor
start-up
shutdown
start-up
start defrost
outdoor blower fan
start-up
shutdown
start-up
start defrost
in door blower fan
start-up
start defrost


Tr
Ts+3℃
Ts-1℃
TP2
-5℃
running time A
running time B(A+B>40MIN)
1 MIN
compressor
start-up
shutdown
start-up
start defrost
outdoor blower fan
start-up
shutdown
start-up
start defrost
in door blower fan
start-up
start defrost



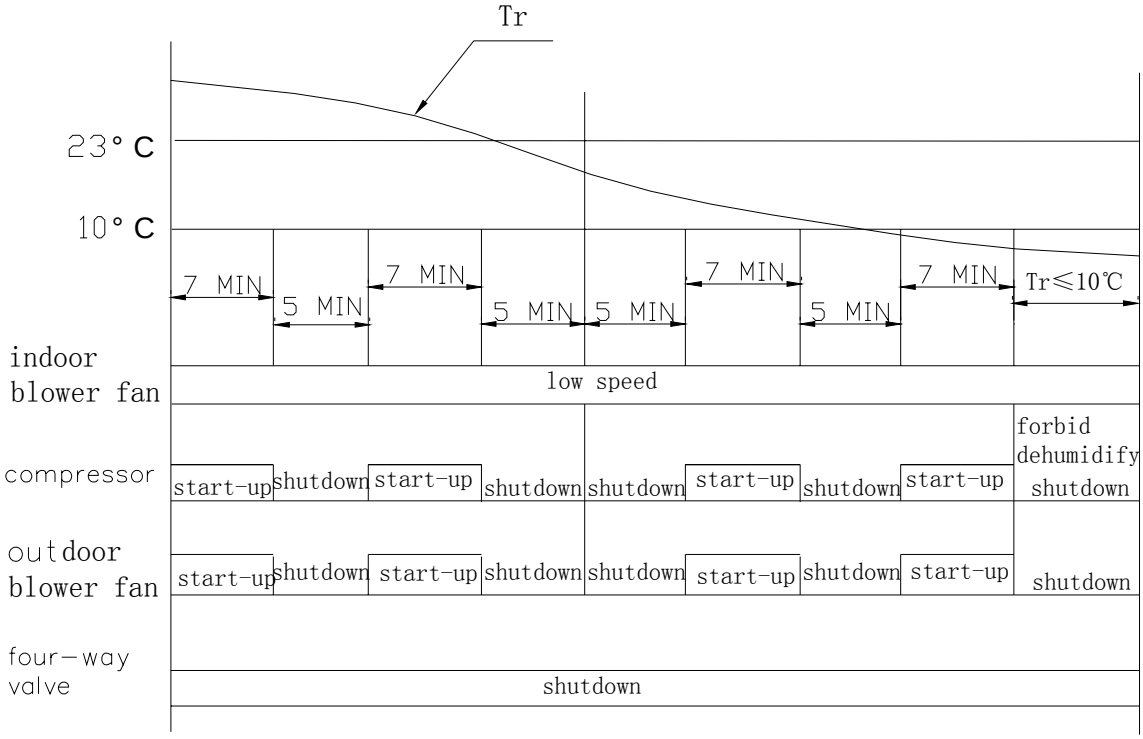


■ Sequence chart in defrosting mode



Dehumidification

Dehumidification running is to eliminate the water vapor in the air by using the cool circulating capacity, but the dehumidification will not decrease the indoor temperature in great deal. The air conditioner automatically repeats on and off circulation according the room temperature, which is shown in the following figure.



- In the dehumidification mode, the indoor fan is running at the low speed for twenty seconds at first, then it selects working mode.

Ventilation working mode

In the ventilation mode .When ventilating, the compressor, outdoor blower fan, four-way valve and electric heating are all closed and the indoor blower fan is running at the set speed.

Automatic mode

- Conditions for entering the automatic running mode are: After power-up for the first time, start up and select the automatic operating mode of remote or press emergency key, the working mode depends on Tr and if the working mode had set , it doesn't change by Tr and the default set temperature is 25 ℃.

Time on and time off

When the time on or time off is used, the clock of remote controller shall be corresponding to the current clock and the timing times is less than or equal to 24 hours, when the timing time is reached, unit will start-up or shutdown.

Sleep function

When the sleep key is press, air conditioner enter sleep state, indoor blower fan running at low speed, only sleep indication display.

Emergency key function

There is a forcible execution key on the panel of indoor units and the air conditioner can run by pressing the key when the remote control is out of work or missing.
When pressing down the forcible execution key, then power up and enter the self-check program.

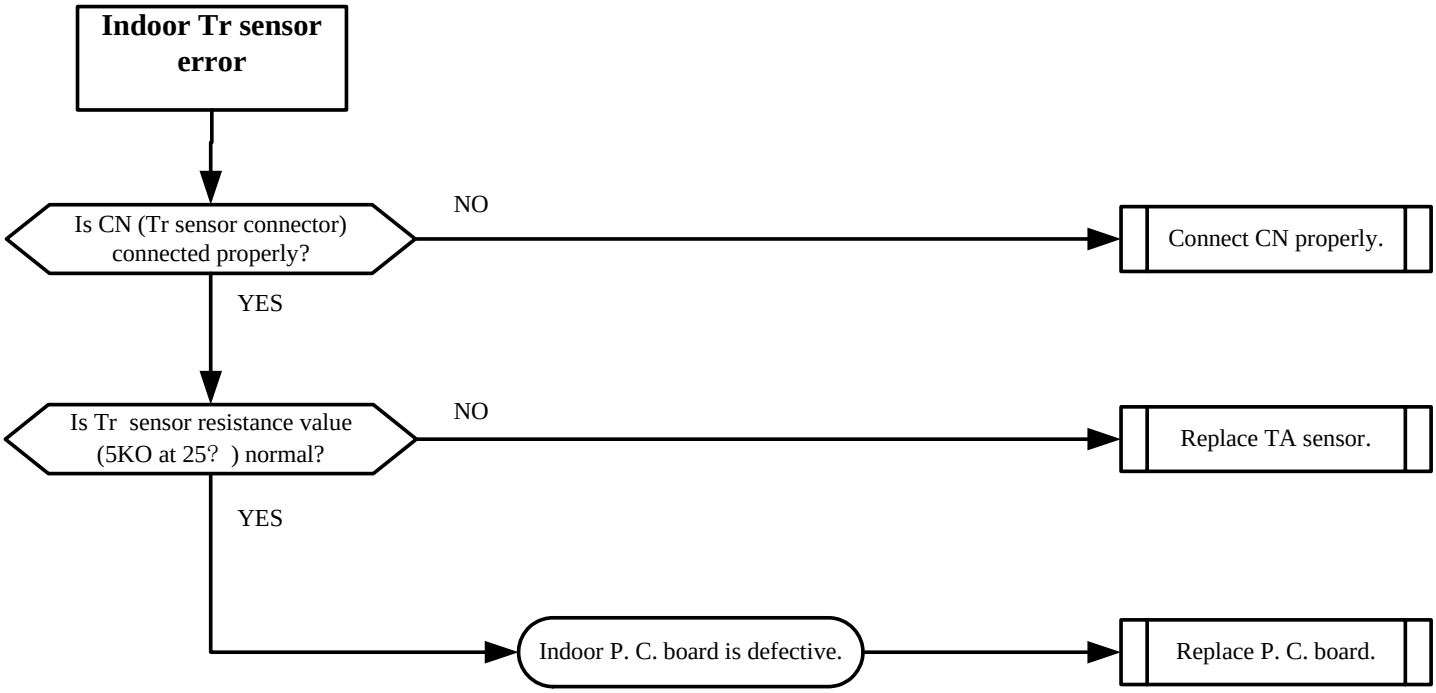
Failure display

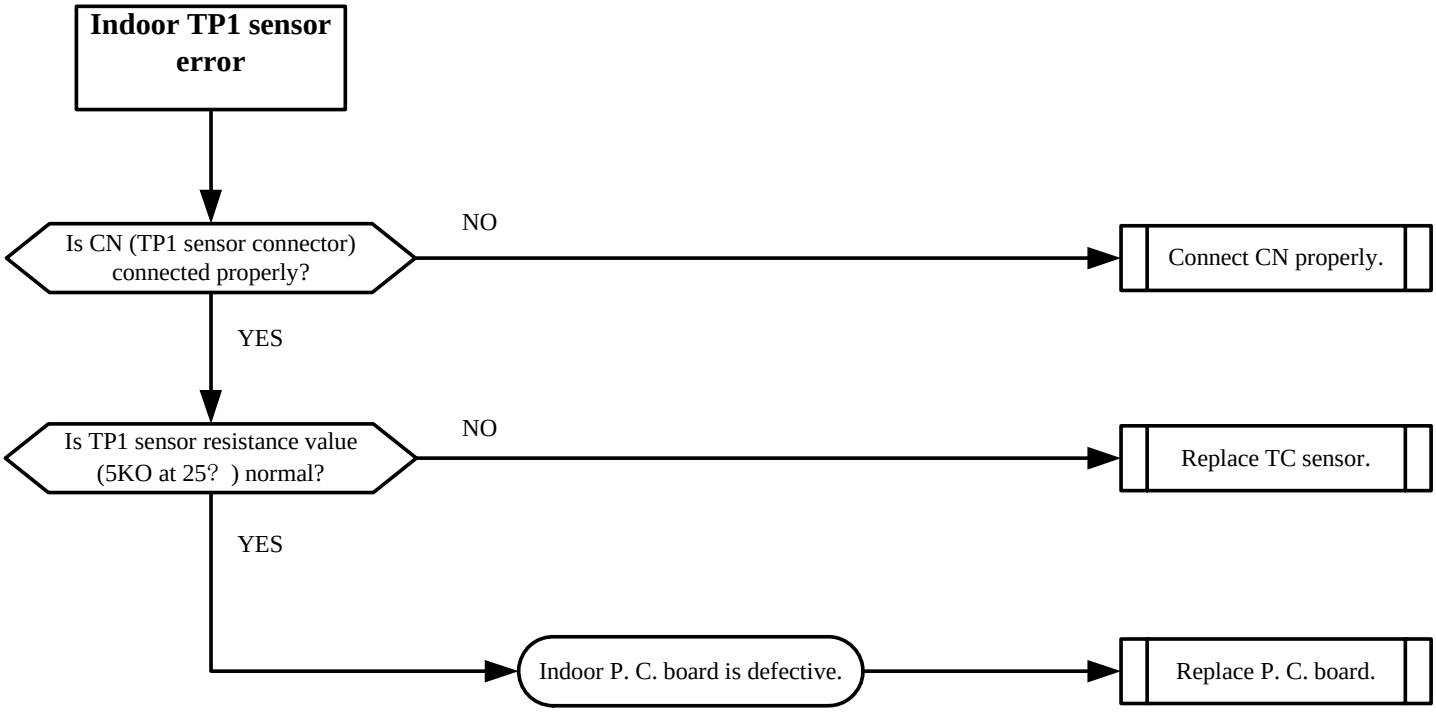
LED		lamp display		failure	The reason of fault and solution
code	explain	code	explain		
DF	display at on state	flicker 1/1 SEC		defrost indication	Normal, the defrost state is removed, it will return to normal condition automatically
	display at off state	flicker 1/3 SEC		anti cold wind	1、 Normal (during heating mode) 2、It will be removed when the coil pipe temperature sensor reaches certain temperature.
E2	display at off state	flicker 1/1 SEC	display at on/off state	room temp. sensor fault	1、Check whether the resistance of the sensor is normal (the resistance is 5KΩ in the normal temperature 25℃), when it is abnormal the sensor should be replaced. 2、Check whether there is short circuit or open circuit in the wire of the sensor, and whether the plug is connected well, whether there is welding off or rosin joint on the electric control board, if there is any, it should be repaired. 3、When the 1 and 2 are both normal, then the components or integrated circuit is damaged, the electric control board should be replaced.
E3	display at off state	flicker 3/5 SEC	display at on/off	coil temp. sensor fault	1、Check whether the resistance of the sensor is normal (the resistance is 5KΩ in

			state		the normal temperature 25℃), when it is abnormal the sensor should be replaced. 2、Check whether there is short circuit or open circuit in the wire of the sensor, and whether the plug is connected well, whether there is welding off or rosin joint on the electric control board, if there is any, it should be repaired. 3、When the 1 and 2 are both normal, then the components or integrated circuit is damaged, the electric control board should be replaced.
E4	display at on/off state	flicker 4/6 SEC	display at off state	outdoor unit abnormal	1、 Check whether the winding resistance and operation current of the compressor are normal. 2、Check whether the high and low pressure is normal when the unit is running. 3、Check (whether the coil pipe sensor is normal) whether the contact of the inserter on the circuit board is well, the coil pipe temperature sensor is fixed, the evaporation of the indoor unit is well, the key is to check the evaporator temperature detected by the coil pipe temperature sensor has reached the cooling or heating temperature. 4 、 Check whether the surface of the condenser is too dirty, it should be cleaned when it is too dirty. 5、Check whether the capacitance of the outdoor motor and the fan is damaged, it should be replaced when it is damaged. 6、If the above items are normal, the electric control board should be replaced.
E5	PG motor display at off state	flicker 5/7 SEC	display at off state	no feedback signal of indoor fan	1、Check whether two sets of plugs on the outlet end of the motor have loosed from the socket of the electric control board, insert it firmly when loosing. 2、Check whether the indoor motor has damaged, the motor should be replaced when it is damaged 3、 Check whether the controllable silicon and other components on the electric control board have damaged, replace the controllable silicon or electric control board when they are damaged.
E6	PG motor	flicker 6/8	display	no over zero	1、Firstly check whether the indoor fan is

	display at off state	SEC	at off state	signal	normal. 2、Check whether the signal outputting from the integrated chip of the electric control board is normal, the electric control board should be replaced when the signal is abnormal.
E7	display at off state	flicker 7/9 SEC	display at off state	outdoor feedback fault	1、Check whether the winding resistance and operation current of the compressor are normal 2、Check whether the high and low pressure is normal when the unit is running. 3、Check whether the indoor and outdoor wiring is right; when it is wrong, connect them again according to the circuit diagram 4、 Check whether the contact of the inserter on the circuit board and the connection are well, otherwise repair. 5、Check whether the signal feedback wire is disconnected, replace or connect the feedback signal wire. 6、Check whether the supply power is phase-lacking or phase opposition. 7、Check whether the AC electromagnetic contactor is well.
E8	display at off state	flicker 8/10 SEC	display at off state	frost protection/over heat protection	1、Check whether the filter of the indoor unit is dirty or blocked, and clean if it is dirty. 2、Check whether the indoor fan is running normally, and replace the motor if it is abnormal. 3、Check whether indoor pipe temperature sensor is normal, and replace the sensor if it is abnormal. 4、Check whether the system pressure is normal, if abnormal, should check whether there is leakage, and fill the refrigerant again.

8. TROUBLE SHOOTING



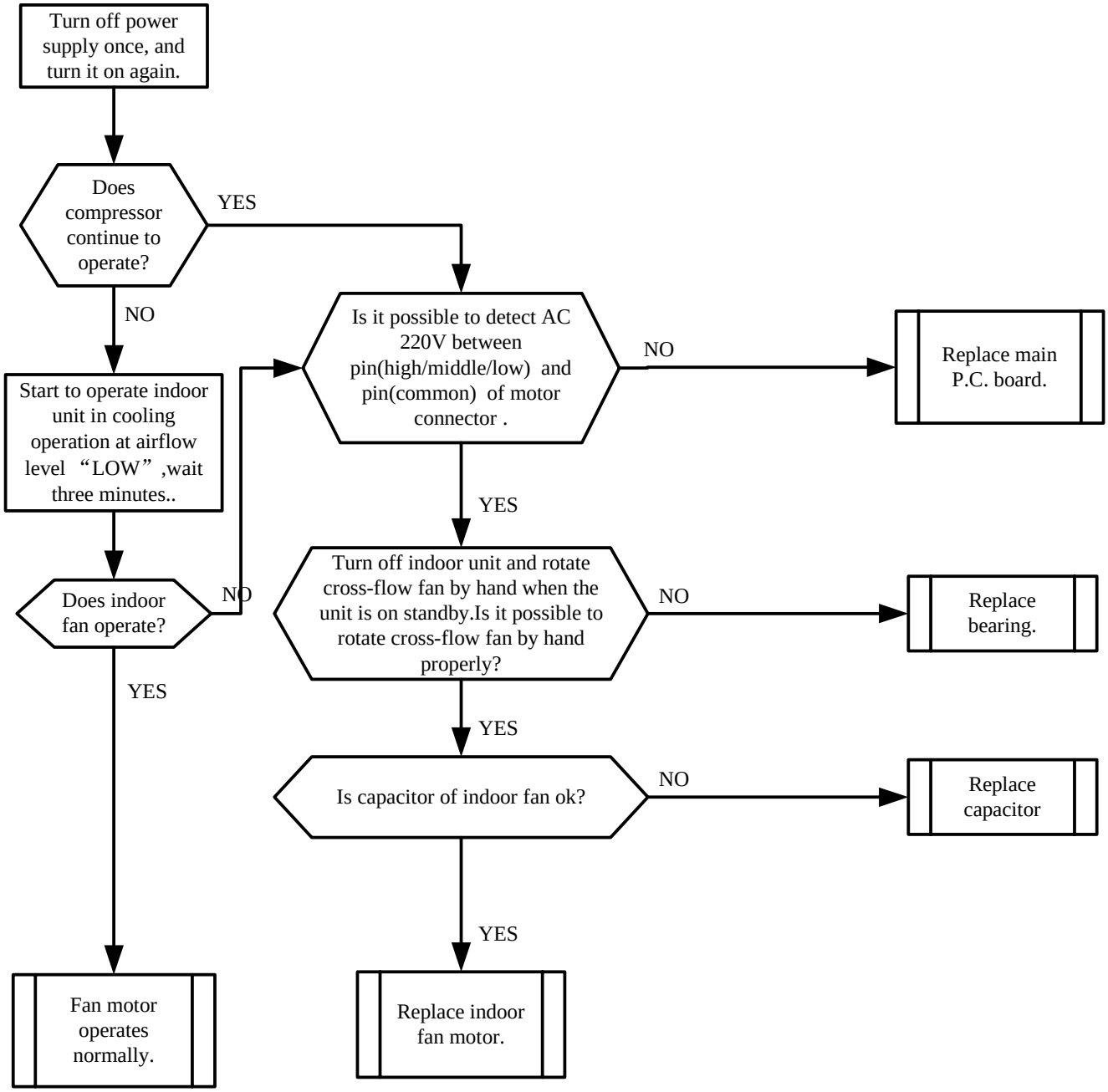


Only indoor fan motor does not operate.

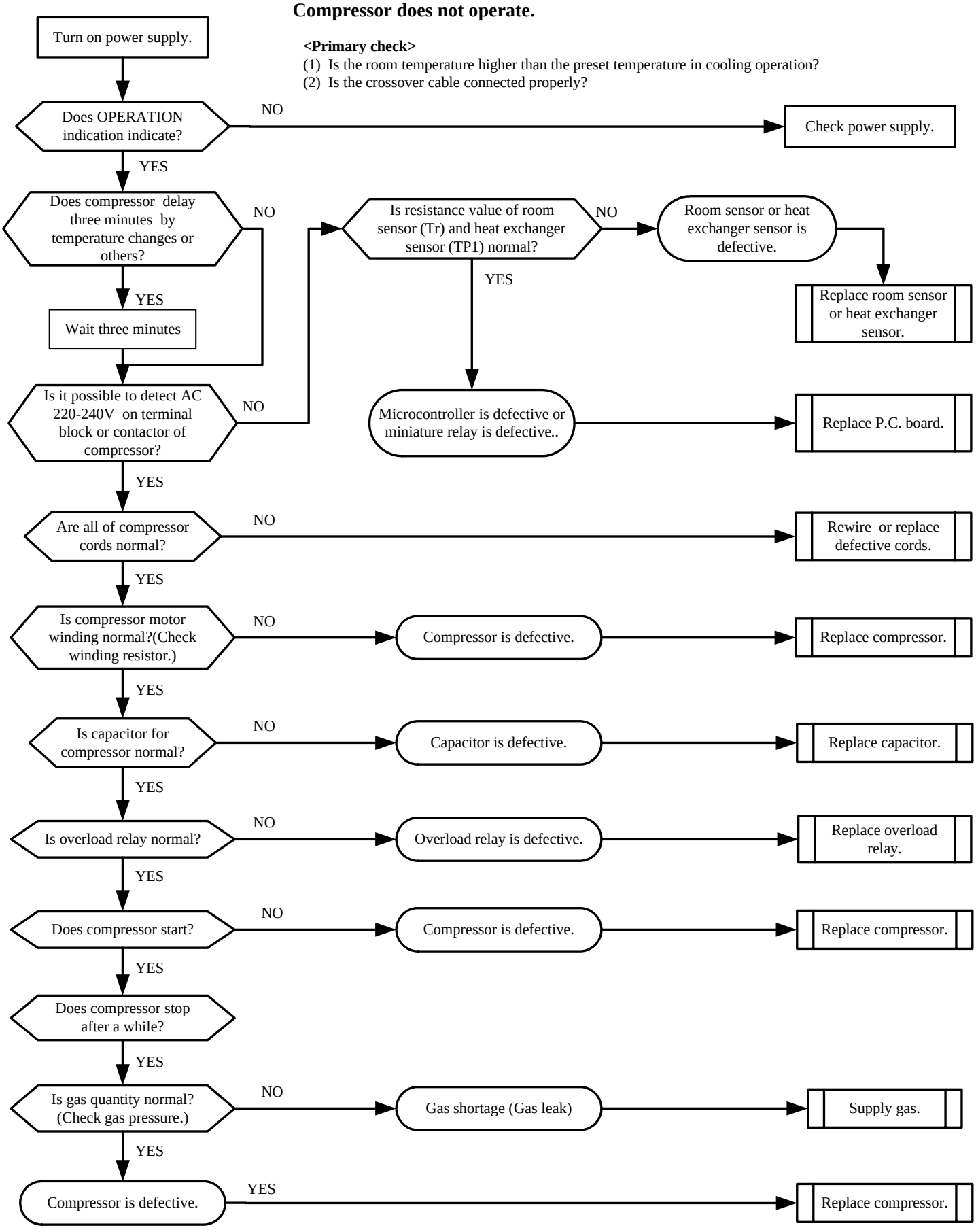
<Primary check>

(1) Is it possible to detect the power supply voltage (200-240V) between L and N on the terminal block?

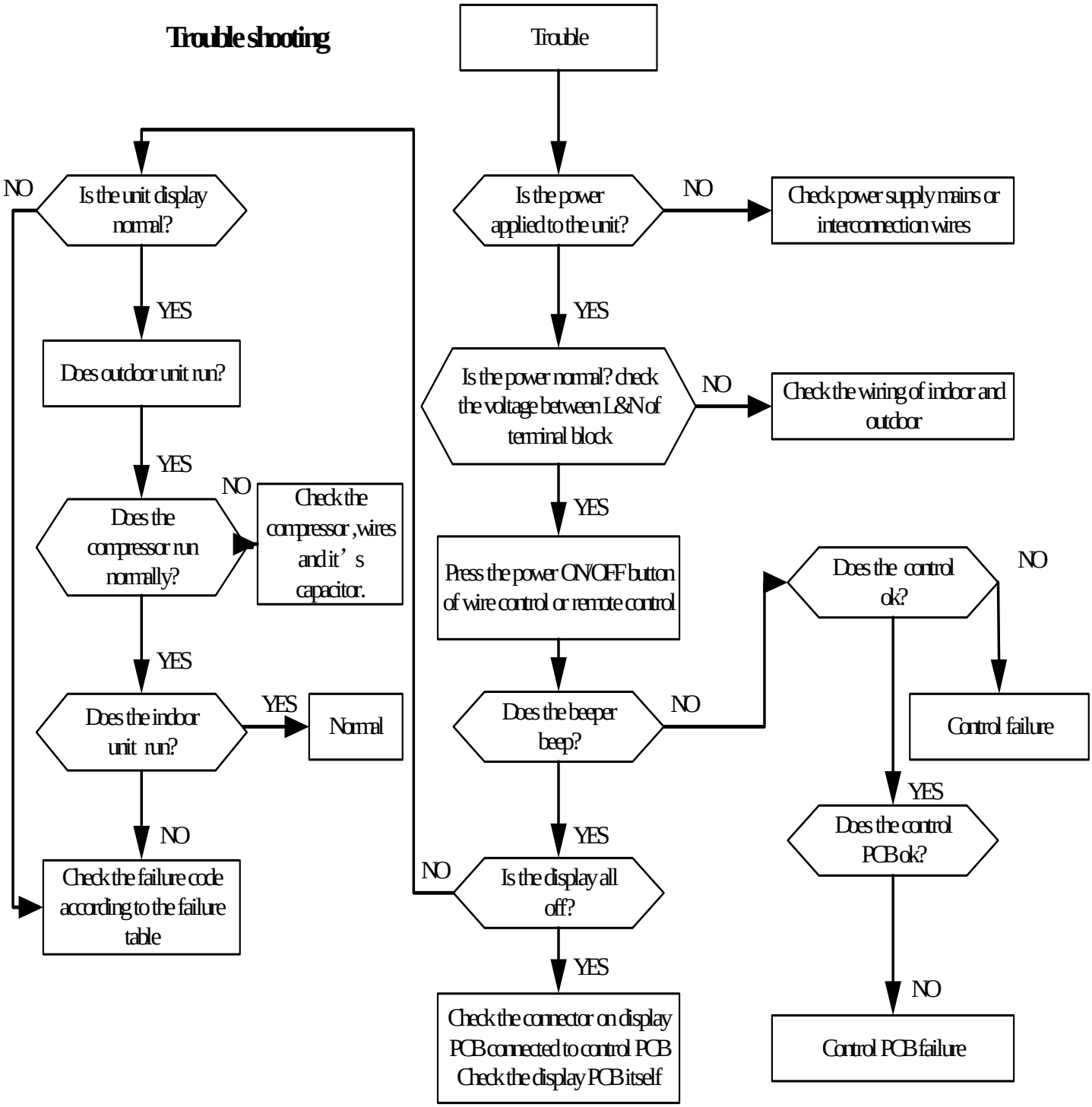
(2) Does the indoor fan motor operate in cooling operation?


Turn off power supply once, and turn it on again.
Does compressor continue to operate?
YES
NO
Start to operate indoor unit in cooling operation at airflow level “LOW”,wait three minutes..
Does indoor fan operate?
NO
YES
Fan motor operates normally.
Is it possible to detect AC 220V between pin(high/middle/low) and pin(common) of motor connector .
NO
Replace main P.C. board.
YES
Turn off indoor unit and rotate cross-flow fan by hand when the unit is on standby.Is it possible to rotate cross-flow fan by hand properly?
NO
Replace bearing.
YES
Is capacitor of indoor fan ok?
NO
Replace capacitor
YES
Replace indoor fan motor.

Compressor does not operate.



Trouble shooting



Indoor unit and outdoor unit don’t operate